ARTICULATION AGREEMENT FORM

A. SENDING AND RECEIVING INSTITUTIONS

Sending College:	Borough of Manhattan Community College/CUNY
Department:	Mathematics
Program:	Mathematics
Degree:	Associate of Science (A.S.)

Receiving College:	New York City College of Technology/CUNY
Department:	Mathematics
Program:	Applied Mathematics
Degree:	Bachelor of Science (B.S.)

B. ADMISSION REQUIREMENTS FOR SENIOR COLLEGE PROGRAM

- A.S. degree in Mathematics and a minimum GPA of 2.00
- Grade of C or better in all Mathematics courses
- Grade of C or better in English composition, its equivalent, or a higher-level English course

Total transfer credits granted toward the baccalaureate degree: 60

Total additional credits required at the senior college to complete baccalaureate degree: 60

Total credits required to complete the baccalaureate degree: 120

C. TRANSFER CREDITS AWARDED

Borough of Manhattan Community College (BMCC) graduates who complete the Associate in Science (A.S.) in Mathematics will receive 60 credits toward the Bachelor of Science (B.S.) in Applied Mathematics at New York City College of Technology (City Tech).

Common Core	
Required Common Core	
English Composition	6
Mathematical & Quantitative Reasoning[1]	3
Life & Physical Science[2]	3
Total Required Common Core	12
Flexible Core	
Creative Expression	6
World Culture & Global Issues	3
U.S. Experiences in Its Diversity[3]	3
Individual & Society	3
Scientific World[4]	3
Total Flexible Core	18
Total Common Core	30
Curriculum Requirements	
MAT 301 Analytic Geometry and Calculus I	4
MAT 302 Analytic Geometry and Calculus II	4
MAT 303 Analytic Geometry and Calculus III	4
MAT 315 Linear Algebra	3
Program Electives *Complete at 9 credits from the following courses*[5]*:* CSC 210 Computer Programming II[5, 6] (4 credits) MAT 200 Introduction to Discrete Mathematics[5] (4 credits) MAT 209 Statistics (4 credits) MAT 320 Abstract Algebra (3 credits) MAT 501 Ordinary Differential Equations5 (3 credits) MAT 505 History of Mathematics (3 credits) MAT 601 Advanced Calculus I (4 credits)	9
XXX xxx Modern Language Course[7]	3
General Elective[8]	3
Total Curriculum Credits	30
Total Program Credits	60

1. Students must take MAT 206 or a higher level 4-credit math course.
2. Students are required to take BIO 210, CHE 201, PHY 210, or PHY 215. Students who intend to transfer to City Tech under this agreement must select either BIO 210 or PHY 215
3. Students interested in pursuing the Financial Services concentration are required to take the ECO 201 course at BMCC in order to satisfy a major requirement at City Tech.
4. Students are required to take BIO 220, CHE 202, PHY 220, PHY 225 or CSC 110. Students who intend to transfer to City Tech under this agreement must take CSC 110.
5. Students who intend to transfer to City Tech must take CSC 210, MAT 200 and MAT 501 at BMCC in order to get credit towards the Applied Mathematics major at City Tech.
6. The prerequisite for CSC 210 is CSC 110 Computer Programming.
7. Students are required to take two semesters of the same modern language to graduate. One semester can be satisfied in the World Cultures and Global Issues area.
8. These credits can be satisfied by taking STEM variants in the Common Core.

D. ADVISOR RECOMMENDATIONS

Students transferring to City Tech to Applied Mathematics Program must take CSC 110, CSC 210, MAT 200, and MAT 501. As part of Life and Physical Science requirement, students transferring to City Tech must take BIO 210 or CHE 201 for Applied Mathematics – Science concentration (ASB) or PHY 215 for the Applied Mathematics – Financial Services (AFB) and Information Sciences (AIB) concentrations. Students interested in pursuing the Applied Mathematics – Financial Services (AFB) concentration are required to take ECO 201 in the US Experiences in its Diversity requirement in order to satisfy a major requirement at City Tech.

E. COURSE EQUIVALENCIES

BMCC Course	**CityTech Course**	**CityTech Requirement Area**
BIO 210 Biology I	BIO 1101 General Biology I	Mathematics Major Foundation Course
CSC 110 Computer Programming*	CST 2403 Intro C++ Lang. Prog. I	Mathematics Major Foundation Course
CSC 210 Computer Programming II*	CST 3503 C++ Programing II	Mathematics Major Foundation Course
ECO 201 Macroeconomics	ECON 1101 Macroeconomics	Mathematics Major Foundation Course
MAT 200 Intro to Discrete Mathematics*	MAT 2440 Discrete Structures and Algorithms I	Mathematics Major Foundation Course
MAT 206 Precalculus*	MAT 1375 Pre-Calculus	Required Common Core
MAT 209 Statistics*	STA 1372 Statistics with Probability	Scientific World
MAT 301 Analytic Geometry and Calculus I	MAT 1475 Calculus I	Mathematics Major Foundation Course
MAT 302 Analytic Geometry and Calculus II	MAT 1575 Calculus II	Mathematics Major Foundation Course
MAT 303 Analytic Geometry and Calculus III	MAT 2675 Calculus III	Mathematics Major Foundation Course
MAT 310 Bridge to Advanced Mathematics**	MAT 2071 Introduction to Proofs and Logic	Math Education Requirement
MAT 315 Linear Algebra	MAT 2580 Introduction to Linear Algebra	Mathematics Major Foundation Course
MAT 320 Abstract Algebra**	MAT 3080 Modern Algebra	Math Education Requirement
MAT 501 Ordinary Differential Equations	MAT 2080 Diff Equations	Mathematics Major Core Course
MAT 505 History of Mathematics	MAT 4030 History of Mathematics	Math Education Requirement
MAT 601 Advanced Calculus I	MAT 3075 Introduction to Real Analysis	Math Education Requirement
PHY 215 University Physics I	PHYS 1441 College Physics I: Calculus Based	Mathematics Major Foundation Course

*These 4 credit courses at BMCC will transfer to City Tech as the equivalent 3-credit course, plus one elective credit.
**These 3 credit courses at BMCC will transfer to City Tech as the equivalent 4-credit course, minus one elective credit.

F. SUMMARY OF TRANSFER CREDITS FROM BMCC AND CREDITS TO BE COMPLETED AT CITY TECH

Applied Mathematics - Financial Sciences Concentration (AFB)			
Program at City Tech	**Total Number of Credits for the Baccalaureate**	**Transfer Credits from BMCC**	**Credits to be Completed at City Tech**
General Education Requirements	**36**	**30**	**6**
Major Requirements	**66**	**27**	**39**
Free Electives	**18**	**3**	**15**
Total	**120**	**60**	**60**

Applied Mathematics - Information Sciences Concentration (AIB)			
Program at City Tech	**Total Number of Credits for the Baccalaureate**	**Transfer Credits from BMCC**	**Credits to be Completed at City Tech**
General Education Requirements	**36**	**30**	**6**
Major Requirements	**73**	**25**	**48**
Free Electives	**11**	**5**	**6**
Total	**120**	**60**	**60**

Applied Mathematics - Science Concentration (ASB)			
Program at City Tech	**Total Number of Credits for the Baccalaureate**	**Transfer Credits from BMCC**	**Credits to be Completed at City Tech**
General Education Requirements	**36**	**30**	**6**
Major Requirements	**74**	**27**	**47**
Free Electives	**10**	**3**	**7**
Total	**120**	**60**	**60**

G. REMAINING SENIOR COLLEGE REQUIREMENTS FOR BACCALAUREATE DEGREE

Courses to be completed at City Tech after completing the A.S. in Mathematics at BMCC.

Applied Mathematics – Financial Sciences Concentration (AFB)

Courses	Credits
College Option Requirements	
COM 1330 – Public Speaking (or higher)[1]	3
Any Interdisciplinary Course in approved list	3
College Option Requirements Subtotal	**6**
Major Requirements	
CST 1204 – Database Systems	3
CST 3504 – Database Design	3
ECON 2301 – Money and Banking	3
MAT 2572 – Probability & Mathematical Statistics I	4
MAT 2630 – Applied Math Technology-- Numerical Methods	3
MAT 3672 – Probability and Statistics II	4
MAT 3770 – Math Modeling I (Optimization)	3
MAT 3772 – Stochastic Models	3
MAT 3788 – Applied Math – Applications of the Heat Equation	3
MAT 4672 – Computational Statistics	3
MAT 4788 – Financial Risk	3
MAT 4900 – Internship I	2
MAT 4901 – Internship II	2
Major Requirements Subtotal	**39**
Free Electives	
Electives	**15**
Total Credits to be Completed at City Tech	**60**
Total Credits Transferred from BMCC	**60**
Total Credits Needed for the Baccalaureate Degree	**120**

[1] Students who already completed a speech/oral communication course can substitute an upper lever liberal arts course instead.

Note: Students at New York City College of Technology must complete two courses designated Writing Intensive (WI) for the baccalaureate level, one from Gen Ed and one from the major.

Applied Mathematics – Information Sciences Concentration (AIB)

Courses	Credits
College Option Requirements	
COM 1330 – Public Speaking (or higher)[1]	3
Any Interdisciplinary Course in approved list	3
College Option Requirements Subtotal	**6**
Major Requirements	
EET 1222 – Circuit Analysis II	5
EET 1240 – Electronics	4
EET 2140 – Communication Electronics	3
EET 2162 – Digital Electronics I	3
MAT 2572 – Probability and Mathematical Statistics I	4
MAT 2630 –Applied Math Technology – Numerical Methods	3
MAT 3770 – Math Modeling I (Optimization)	3
MAT 4880 – Math Modeling II	3
MAT 4900 – Internship I	2
MAT 4901 – Internship II	2
PHYS 1442 – General Physics II: Calculus Based	5
TCET 2102 – Analog and Digital Telephony	4
TCET 2242 – Microcomputer Interfacing	3
TCET 3102 – Analog and Digital Communications I	4
Major Requirements Subtotal	**48**
Free Electives	
Electives	**6**
Total Credits to be Completed at City Tech	**60**
Total Credits Transferred from BMCC	**60**
Total Credits Needed for the Baccalaureate Degree	**120**

[1] Students who already completed a speech/oral communication course can substitute an upper lever liberal arts course instead.

Note: Students at New York City College of Technology must complete two courses designated Writing Intensive (WI) for the baccalaureate level, one from Gen Ed and one from the major.

Applied Mathematics –Science Concentration (AFB)

Courses	Credits
College Option Requirements	
COM 1330 – Public Speaking (or higher)[1]	3
Any Interdisciplinary Course in approved list	3
College Option Requirements Subtotal	**6**
Major Requirements	
BIO 2311 – Human Anatomy and Physiology I	4
CST 1101 – Problem Solving with Computer Programming	3
CHEM 1110 – General Chemistry I	4
CHEM 1210 – General Chemistry II	4
CHEM 2223 – Organic Chemistry I	5
MAT 2572 – Probability and Mathematical Statistics I	4
MAT 2630 – Applied Math Technology – Numerical Methods	3
MAT 3672 – Probability and Mathematical Statistics II	4
MAT 3770 – Math Modeling I (Optimization)	3
MAT 3772 – Stochastic Models	3
MAT 3880 – Introduction to PDE Using Math Models in Biology	3
MAT 4672 – Computational Statistics	3
MAT 4900 – Internship I	2
MAT 4901 – Internship II	2
Major Requirements Subtotal	**47**
Free Electives	
Electives	**7**
Total Credits to be Completed at City Tech	**60**
Total Credits Transferred from BMCC	**60**
Total Credits Needed for the Baccalaureate Degree	**120**

[1] Students who already completed a speech/oral communication course can substitute an upper lever liberal arts course instead.

Note: Students at New York City College of Technology must complete two courses designated Writing Intensive (WI) for the baccalaureate level, one from Gen Ed and one from the major.

G. ARTICULATION AGREEMENT FOLLOW-UP PROCEDURES

1. *Procedures for reviewing, updating, modifying or terminating agreement:*
   When either of the degree programs involved in this agreement undergoes a change, the agreement will be reviewed and revised accordingly by faculty from each institution's respective departments, selected by their chairpersons and/or program directors.

2. *Procedures for evaluating agreement, i.e., tracking the number of students who transfer under the articulation agreement and their success:*
   Each year City Tech will provide BMCC with the following information: a) the number of BMCC students who applied to the program; b) the number of BMCC students who were accepted into the program; c) the number of BMCC students who enrolled; and d) the aggregate GPA of these enrolled students.

3. *Sending and receiving college procedures for publicizing agreement, e.g., college catalogs, transfer advisers, Websites, etc.:*
   This articulation agreement will be publicized on the BMCC website, and the City Tech website. Transfer advisors at BMCC will promote this agreement with eligible students.

Effective Date: Fall 2017