

KINGSBOROUGH COMMUNITY COLLEGE
The City University of New York

CURRICULUM TRANSMITTAL COVER PAGE

Department: Department of Mathematics & Computer Science Date: 8/10/2026

Title Of Course/Degree/Concentration/Certificate: Computer Programming with Python (CP 600)

Change(s) Initiated: (Please check)

- | | |
|---|---|
| ☐ Closing of Degree | ☐ Change in Degree or Certificate |
| ☐ Closing of Certificate | ☐ Change in Degree: Adding Concentration |
| ☐ New Certificate Proposal | ☐ Change in Degree: Deleting Concentration |
| ☐ New Degree Proposal | ☐ Change in Prerequisite, Corequisite, and/or Pre/Co-requisite |
| ☒ New Course | ☐ Change in Course Designation |
| ☐ New 82 Course (Pilot Course) | ☐ Change in Course Description |
| ☐ Deletion of Course(s) | ☐ Change in Course Title, Number, Credits and/or Hours |
| | ☐ Change in Academic Policy |
| | ☐ Pathways Submission: |
| | ☐ Life and Physical Science |
| | ☐ Math and Quantitative Reasoning |
| | ☐ A. World Cultures and Global Issues |
| | ☐ B. U.S. Experience in its Diversity |
| | ☐ C. Creative Expression |
| | ☐ D. Individual and Society |
| | ☐ E. Scientific World |
- ☐ Change in Program Learning Outcomes
- ☐ Other (please describe): _____

PLEASE ATTACH MATERIAL TO ILLUSTRATE AND EXPLAIN ALL CHANGES

DEPARTMENTAL ACTION

Action by Department and/or Departmental Committee, if required:

Date Approved: 8/19/26 Signature, Committee Chairperson: 

If submitted Curriculum Action affects another Department, signature of the affected Department(s) is required:

Date Approved: _____ Signature, Department Chairperson: _____

Date Approved: _____ Signature, Department Chairperson: _____

I have reviewed the attached material/proposal

Signature, Department Chairperson: Rina Garmish

TO: Fall 2026 Curriculum Committee

FROM: Prof. Yarmish, Chair, Department of Mathematics & Computer Science

DATE: 8/10/2026

RE: New Course: Computer Programming with Python (CP 600)

The Department of Mathematics & Computer Science is proposing a new course as follows:

ADD:

Computer Programming with Python (CP 600)

Rationale for Change:

This course will provide students in the Computer Information Systems program with a comprehensive introduction to programming using Python, a widely used programming language in business and technology environments. Emphasis will be placed on efficient problem-solving techniques relevant to today's artificial intelligence and data-driven technology landscape.

Students will develop foundational programming skills, including algorithm design, object-oriented programming, file handling and processing, and the use of open-source libraries. These concepts will be applied to solving real-world problems through hands-on programming activities and projects.

The course will strengthen the CIS curriculum by providing students with practical programming experience using Python while also introducing emerging technologies and applications in areas such as artificial intelligence, data mining, and cloud computing. It will help prepare students for advanced coursework and for the increasing use of Python in technology-related careers.

Upon successful completion of the course, students will also be prepared for the PCEP – Certified Entry-Level Python Programmer certification exam.



New Course Proposal Form

1. Complete the requested course information in the table below. Indicate “**NONE**” where applicable.

*For Assignment of New Course Number, contact **Academic Scheduling**.

Department:	Mathematics and Computer Science
Course Designation/Prefix:	CP
*Course Number:	600
Course Title:	Computer Programming with Python
Course Description: (Description should include language similar to Course Learning Outcomes)	Computer programming with emphasis on efficient problem solving techniques for modern AI and data-driven world. Topics will include object-oriented programming, file handling, and emerging technologies. Upon completion, students will be prepared for the PCEP (Certified Entry-level Python Programmer) exam.
Prerequisite(s):	Math proficiency per CUNY guidelines
Corequisite(s):	NONE
Pre-/Co-requisite(s):	NONE
Indicate if: - Open ONLY to Select Student Population(s) OR - Specific Student Population(s) are RESTRICTED from enrollment in the course Specify Population	NONE
Frequency course is to be offered (Select All that Apply)	☒ Fall ☒ Winter ☒ Spring ☒ Summer
Suggested Class Limit:	24 per class
Indicate if a special space, such as a lab, and/or special equipment will be required:	Lab space with computers for students. Projector for instructors.
Faculty Information:	
Are there currently faculty within the Department available to teach this course?	☒ Yes* ☐ No*
Does this course require the faculty member to have a specific credential?	☐ Yes* ☒ No
*If yes, please provide a Staffing Plan (see #13)	

Does this course provide an imbedded Microcredential or Industry Certification?	☒ Yes ☐ No
If yes, please include relevant information	PCEP (Certified Entry-level Python Programmer)

2. Credits and Hours based on MSCHE Guidelines for *College Credits Assigned for Instructional Hours* - *Hours are based on hours per week in a typical 12-week semester (Please check **ONE** box based on credits):

1-credit:	☐ 1 hour lecture ☐ 2 hours lab/field/gym
2-credits:	☐ 2 hours lecture ☐ 1 hour lecture, 2 hours lab/field ☐ 4 hours lab/field
3-credits:	☐ 3 hours lecture ☒ 2 hours lecture, 2 hours lab/field ☐ 1 hour lecture, 4 hours lab/field ☐ 6 hours lab/field
4-credits:	☐ 4 hours lecture ☐ 3 hours lecture, 2 hours lab/field ☐ 2 hours lecture, 4 hours lab/field ☐ 1 hour lecture, 6 hours lab/field ☐ 8 hours lab/field
More than 4-credits: ☐ Number of credits: ____ (explain mix lecture/lab below) ____ Lecture ____ Lab Explanation: _____	

3. **Where** does this course fit? Select from the following:

☒ Degree Program(s)/Certificate(s)*	List Degree Program(s)/Certificate(s): 1. A.A.S., Computer Information Systems 2.
☐ General Education/Pathways	Select ONE of the following: ☐ Life and Physical Science (LPS) ☐ Math and Quantitative Reasoning (MQR) ☐ World Cultures and Global Issues (Group A) ☐ U.S. Experience in its Diversity (Group B) ☐ Creative Expression (Group C) ☐ Individual and Society (Group D) ☐ Scientific World (Group E)

☐ 82XX Pilot/Experimental Course	If proposed as a “real” course, where will this course fit? Select from the following: List Degree Program(s)/Certificate(s): 1. 2. Select ONE of the following: ☐ Life and Physical Science (LPS) ☐ Math and Quantitative Reasoning (MQR) ☐ World Cultures and Global Issues (Group A) ☐ U.S. Experience in its Diversity (Group B) ☐ Creative Expression (Group C) ☐ Individual and Society (Group D) ☐ Scientific World (Group E)
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***If Degree Program/Certificate is Selected:**

- Include an updated **Curricular** Map (Program Learning Outcomes) for each Degree Program/Certificate listed above.
- Include an updated Degree Map (semester-by-semester course sequence) for each Degree Program/Certificate listed above. For Degree Map template, contact Amanda Kalin, ext. 4611, Amanda.Kalin@kbcc.cuny.edu

The Following NYSED Guidelines must be adhered to for **ALL** Degree Programs:

45 credits of Liberal Arts (General Education) course work for an Associate of Arts Degree (AA)
 30 credits of Liberal Arts (General Education) course work for an Associate of Science Degree (AS)
 20 credits of Liberal Arts (General Education) course work for an Applied Associate of Science (AAS)

Additional Separate Submissions Required:

1. Curriculum Transmittal Cover Page indicating a “Change in Degree or Certificate”
2. Memo with rationale for inclusion of the course within the curriculum
3. “Current” Degree with all proposed deletions (strikeouts) and additions (bolded) clearly indicated
4. “Proposed” Degree, which displays the degree as it will appear in the *College Catalog*

For a copy of the most up-to-date Degree/Certificate requirements contact Amanda Kalin, ext. 4611, Amanda.Kalin@kbcc.cuny.edu

If General Education/Pathways is Selected:

- [Please refer to NYSED Guidelines for courses that are considered Liberal Arts \(General Education\).](#)
- Pilot/Experimental/82XX courses CANNOT be submitted for Pathways until they are submitted as a “real” course.

Additional Separate Submissions Required:

1. Curriculum Transmittal Cover Page indicating BOTH “New Course” and “Pathways”
2. CUNY Common Core Pathways Submission Form

4. **List the Course Learning Outcomes:** – Course Learning Outcomes are measureable/demonstrable, containing “**action verbs**” (Blooms Taxonomy). If proposed to PATHWAYS, the Course Learning Outcomes should *significantly* align with the Pathways Learning Outcomes (refer to the Pathways Common Core Submission Form for Pathways Learning Outcomes). If proposed for a Degree program, the course should align with the Program Learning Outcomes (PLOs). **REMINDER** – Course Learning Outcomes are consistent for **ALL sections** of the same course and **MUST** be included on the syllabus.

Course Learning Outcomes
1. Design and implement algorithms in a high-level language (Python) to solve real world problems
2. Gain an understanding of emerging techniques in the fields of AI, data mining, and cloud computing
3. Use built-in open-source libraries to increase programming efficiency
4. Learn object-oriented programming and identify problems for which it is appropriate
5. Demonstrate proficiency in file handling techniques, including writing, reading, and updating
6. Understand the components of a computer system and how computer programs interact with them

5. **Assessment of Course Learning Outcomes:** The Course Learning Outcomes are measurable/demonstrable through the below listed sample assignments/activities. Include percentage breakdown for grading. **REMINDER** - Assessment of Course Learning Outcomes are based on a **Common Syllabus** – to allow for **any** qualified instructor to teach the course.

Course Learning Outcome	Percentage of Grade	Measurement of Learning Outcome (Artifact/Assignment/Activity)
1. Design and implement algorithms in a high-level language (Python) to solve real world problems	~40%	Lab assignments/programs, exams
2. Gain an understanding of emerging techniques in the fields of AI, data mining, and cloud computing	~15%	Lab assignments/programs, exams
3. Use built-in open-source libraries to increase programming efficiency	~15%	Lab assignments/programs, exams
4. Learn object-oriented programming and identify problems for which it is appropriate	~10%	Lab assignments/programs, exams
5. Demonstrate proficiency in file handling techniques, including writing, reading, and updating	~10%	Lab assignments/programs, exams
6. Understand the components of a computer system and how computer programs interact with them	~10%	Lab assignments/programs, exams

Suggested grading breakdown: Lab Assignments/Programs: 50% total; In-class Exams: 30% total; Comprehensive Final Exam: 20%.

6. **Who** is expected to enroll in this course? Please provide details for the student population(s), degree program(s)/certificate(s), and applicable concentration(s), this course is expected to address.

Students in the Computer Information Systems A.A.S. degree program.

7. Explain **why** this course is a necessary addition to the curriculum. **REMINDER** – Explain the course’s role within the selected Pathways Group or Degree program – How does this course meet the Program Learning Outcomes (PLOs)? Was the course a recommendation from a recent Academic Program Review (APR), Advisory Board, Accrediting Body, etc.? How might this course help students upon transfer to a baccalaureate program or transition into a career/workforce after KCC?

- Computer systems have altered virtually every facet of our society. The emerging fields of AI and “big data” are rapidly altering the way we shop, bank, and book our vacation and business travel arrangements online.
- Today, virtually all information is stored online. The ability to access and process vast amounts of information is an essential skill for specialists in the Computer Information field.
- Students entering the Computer Information field need to be knowledgeable in the basic functions of computer systems and components.
- It is in consonance with Kingsborough’s commitment to serve a widely diverse student population and to enhance the learning and employment opportunities of the Brooklyn community.
- Successful completion of this course should assist the student in many careers since computer literacy is a necessary skill for many career activities.

8. **Transfer** – Provide a general explanation of the transferability of this course. Address all of the following in your explanation:
- a. Will this course meet a specific **degree requirement** in the equivalent baccalaureate program? Include the institution, degree program, and course equivalency.
 - b. Will this course serve as the equivalent of a freshman/sophomore course (100/200 level)?
 - c. Do we currently have an Articulation Agreement established (see current [Articulation Agreements](#)) with the transfer institution for the equivalent degree program? If you have a tentative Articulation Agreement/Communication with Chair at the transfer institution, please include.

The course may be equivalent to the following courses within CUNY:

Baruch: CIS-3120 Programming for Analytics; BMCC: CSC-203 Python Programming for Data Science; School of Professional Studies: IS-384 Python for Data Science; Brooklyn College: CISC-1215 Introduction to Programming using Python; Laguardia: MAC-108 Introduction to Programming using Python; Queensborough: ET-574 Programming and Applications with Python

9. Will adding the course potentially **conflict** with other courses – in content or subject matter – offered in either your Department or in *another* Department? If it will, please explain **how** and indicate **why** the course is still necessary.

No.

10. Proposed textbook(s) and/or other required instructional material(s), including open educational resources (OER)– Please include any supplemental/recommended materials/texts to allow for **any** qualified instructor to teach the course:

“Intro to Python for Computer Science and Data Science: Learning to Program with Big Data, AI, and the Cloud”, Pearson, 1e (2020)
by Paul Deitel & Harvey Deitel
ISBN: 9780135404676

11. **Attach a Common Syllabus** that includes the Topical Course Outline for the 12-week semester. This should be **specific** and **explicit** regarding the topics covered and should contain the detailed sample assignments/activities being used to measure the Course Learning Outcomes. **REMINDER** – be mindful to focus on the Course Learning Outcomes, Course Content, and Assessment.

12. Selected Bibliography and Source materials:

1. “Introduction to Python Programming and Data Structures”, Pearson 3e by Liang (2023), ISBN: 9780137915972.
2. “Foundational Python for Data Science”, Pearson by Behrman (2022), ISBN: 9780136624356
3. “Python Distilled”, Pearson by Beazley (2022), ISBN: 9780134173276
4. “Intro to Python for Computer Science and Data Science: Learning to Program with Big Data, AI, and the Cloud”, Pearson 1e by Deitel & Deitel (2020), ISBN: 9780135405676
5. “Learn Python 3 the Hard Way: A Very Simple Introduction to Terrifyingly Beautiful World of Computers and Code”, Addison-Wesley 4e by Shaw (2017), ISBN: 9780134692883
6. “Practice of Computing Using Python”, Pearson 3e by Punch & Enbody (2017), ISBN: 9780134379760
7. “Introduction to Programming Using Python”, Pearson 1e by Schneider (2015), ISBN: 9780134058221
8. “Starting Out With Python”, Pearson 6e by Gaddis (2023), ISBN: 9780137922512

9. "Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython", O'Reilly 2e by McKinney (2017), ISBN: 9781491957660

10. "Peter Norton's Introduction To Computers", McGraw-Hill/Irwin 5e by Norton (2002), ISBN: 9780078264214

11. "Computers Simplified", Wiley 5e by Maran (2000), ISBN: 9789764535246

13. **Staffing Plan** – please provide a staffing plan if there are currently **no faculty** within the Department available to teach this course or who do not have the required credential to teach this course.

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August 2026/CI



Departmental Syllabus

1. Complete the requested course information in the table below. Indicate “**NONE**” where applicable.

Department:	Mathematics and Computer Science
Course Designation/Prefix:	CP
Course Number:	600
Course Title:	Computer Programming with Python
Course Description: (Description should include language similar to Course Learning Outcomes)	Computer programming with emphasis on efficient problem solving techniques for modern AI and data-driven world. Topics will include object-oriented programming, file handling, and emerging technologies. Upon completion, students will be prepared for the PCEP (Certified Entry-level Python Programmer) exam.
Prerequisite(s):	Math proficiency per CUNY guidelines
Corequisite(s):	NONE
Pre-/Co-requisite(s):	NONE
Indicate if: - Open ONLY to Select Student Population(s) OR - Specific Student Population(s) are RESTRICTED from enrollment in the course Specify Population	NONE
Frequency course is to be offered (Select All that Apply)	☒ Fall ☒ Winter ☒ Spring ☒ Summer
Indicate if a special space, such as a lab, and/or special equipment will be required:	24 per class
Does this course provide an imbedded Microcredential or Industry Certification?	☒ Yes ☐ No
If yes, please include relevant information	PCEP (Certified Entry-level Python Programmer)

2. Credits and Hours based on MSCHE Guidelines for *College Credits Assigned for Instructional Hours* -***Hours are based on hours per week in a typical 12-week semester** (Please check **ONE** box based on credits):

1-credit:	☐ 1 hour lecture ☐ 2 hours lab/field/gym
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2-credits:	☐ 2 hours lecture ☐ 1 hour lecture, 2 hours lab/field ☐ 4 hours lab/field
3-credits:	☐ 3 hours lecture x 2 hours lecture, 2 hours lab/field ☐ 1 hour lecture, 4 hours lab/field ☐ 6 hours lab/field
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3. **Where** does this course fit? Select from the following:

☒ Degree Program(s)/Certificate(s)*	List Degree Program(s)/Certificate(s): 1. A.A.S., Computer Information Systems 2.
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6. Understand the components of a computer system and how computer programs interact with them

5. **Assessment of Course Learning Outcomes:** The Course Learning Outcomes are measurable/demonstrable through the below listed sample assignments/activities. Include percentage breakdown for grading.
REMINDER - Assessment of Course Learning Outcomes are based on a **Common Syllabus** – to allow for **any** qualified instructor to teach the course.

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Students in the Computer Information Systems A.A.S. degree program.

7. **Transfer** – Provide a general explanation of the transferability of this course.

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8. **Textbook(s)** and/or other required instructional material(s), including open educational resources (OER)– Please include any supplemental/recommended materials/texts to allow for **any** qualified instructor to teach the course:

“Intro to Python for Computer Science and Data Science: Learning to Program with Big Data, AI, and the Cloud”, Pearson, 1e (2020)
by Paul Deitel & Harvey Deitel
ISBN: 9780135404676

9. Topical Course Outline for the 12-week semester. This should be **specific** and **explicit** regarding the topics covered and should contain the detailed sample assignments/activities being used to measure the Course Learning Outcomes. **REMINDER** – be mindful to focus on the Course Learning Outcomes, Course Content, and Assessment.

Week	Topic	Course Learning Outcome (same numbering as above)	Lecture Breakdown (book sections correspond to textbook listed above)	Lab Breakdown (exercises correspond to textbook listed above)
1	Introduction to computers and Python: hardware and software, data formats, operating systems, Python and its libraries	6, 3	2 hours 1.1-1.15	2 hours Choose from exercises p45-48
2	Python basics: variables, arithmetic, strings, basic I/O	1	2 hours 2.1-2.10	2 hours Choose from exercises p71-72
3	Program development and control statements: algorithms, conditionals, loops, nesting, Boolean operators	1	2 hours 3.1-3.18	2 hours Choose from exercises p112-117
4	Modular programming: functions, parameters, scope, Python standard library, math module	1, 3	2 hours 4.1-4.19	2 hours Choose from exercises p152-154
5	Lists and tuples: lists, tuples, slicing, search, sort, two-dimensional lists	1	2 hours 5.1-5.18	2 hours Choose from exercises p201-208
6	Dictionaries and sets: dictionaries, sets, keys, iterators, intersection, union	1	2 hours 6.1-6.5	2 hours Choose from exercises p235-238
7	Arrays: creating and filling arrays, indexing, slicing, NumPy and pandas libraries	1, 3	2 hours 7.1-7.15	2 hours Choose from exercises p276-282

8	Strings: formatting, concatenation, comparison, substrings	1	2 hours 8.1-8.14	2 hours Choose from exercises p313-317
9	Files and exceptions: text files, JSON data format, handling exceptions	5	2 hours 9.1-9.13	2 hours Choose from exercises p350-354
10	Introduction to object-oriented programming: classes, attributes, encapsulation, inheritance, polymorphism, operator overloading	4	2 hours 10.1-10.17	2 hours Choose from exercises p424-430
11	Special topics and applications I: natural language processing, data mining, or machine learning	2	2 hours Choose from 12.1-12.10 13.1-13.8 15.1-15.8	2 hours Choose from exercises p512-514 (Ch12) p561-563 (Ch 13) p658-664 (Ch 15)
12	Special topics and applications II: natural language processing, data mining, or machine learning	2	2 hours Choose from 12.1-12.10 13.1-13.8 15.1-15.8	2 hours Choose from exercises p512-514 (Ch12) p561-563 (Ch 13) p658-664 (Ch 15)

This is a suggested outline only. Exams and reviews should be scheduled as instructor deems appropriate.

Suggested grading breakdown: Lab Assignments/Programs: 50% total; In-class Exams: 30% total;
Comprehensive Final Exam: 20%.

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11. "Computers Simplified", Wiley 5e by Maran (2000), ISBN: 9789764535246

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