KINGSBOROUGH COMMUNITY COLLEGE
The City University of New York

CURRICULUM DATA TRANSMITTAL SHEET

DEPARTMENT Mathematics & Computer Science   **DATE**   March 10, 2015

Title of Course or Degree Change: MAT 700 – Principles of Mathematics

Change(s) Initiated: (Please check)

☐ **Letter of Intent**   ☐ **Proposal**
☐ **Closing of Degree Program**   ☐ **Proposal (Letter of Intent sent previously)**
☐ **New Course***   ☐ **Change in Degree Requirements**
☐ **New 82 Course**   ☐ **Change in Degree Requirements (adding concentration)**
☐ **New Certificate Program**   ☐ **Change in Discipline Code**
☐ **Change in Pre/Co-Requisite**   ☐ **Change in Description**
☐ **Deletion of Course**   ☒ **Change in Course Titles, Numbers, Credits &/or Hours**
☐ **Other (please describe):** _____

PLEASE ATTACH PERTINENT MATERIAL TO ILLUSTRATE AND EXPLAIN ALL CHANGES

I. **DEPARTMENTAL ACTION**
   Action by Department and/or Departmental Committee, if required:

   Date approved 03/10/2015 **Signature, Committee Chairperson:** _Dale Siegel_

   Signature, Department Chair: _Rina Yarmish_

II. **PROVOST ACTION**
   Provost to act within 30 days of receipt and forward to College-wide Curriculum Committee exercising one of the following options:

   A. **Approved** ☐   B. **Returned to department with comments** ☐

   Recommendations (if any): _____

   Signature, Provost: _____   **Date:** _____

III. **CURRICULUM SUB-COMMITTEE RECOMMENDATIONS** (*FOR NEW COURSES ONLY*):

   A. **Approved** ☐   B. **Tabled** ☐ (no action to be taken by Curriculum Committee)

   Recommendations (if any): _____

   Signature, Sub-Committee Chair: _____ **Date:** _____

IV. **COLLEGE-WIDE CURRICULUM COMMITTEE ACTION**

   Committee to act within 30 days of receipt, exercising **one** of the following options:

   A. **Approved**   ☐ (forwarded to Steering Committee)
   B. **Tabled**   ☐ (Department notified)
   C. **Not Approved** ☐ (Department notified)

   Signature, Chairperson of Curriculum Committee _____ **Date:** _____

Revised/Winter 08

From: MAT 700 – Principles of Mathematics
             4 cr.   4 hrs.

To: MAT 700 – Principles of Mathematics
             3 cr.   4 hrs.

<u>Rationale:</u>
The course syllabus for MAT 700 has been adjusted to exclude octal and hexadecimal number systems and complement arithmetic.

This will enable topical course material of a quantity/quality appropriate to a 3-credit course. However depth of coverage would be best served in 4 contact hours per week.

The department wishes the course reconfigured to be submitted for consideration to the pathways committee, for the required core in Mathematical and Quantitative/Reasoning,

This will benefit our students by providing a real choice for pathways, as MAT 700 is very different from MAT 4A0 in both concept and approach.

Kingsborough Community College
of the City University of New York

Department of Mathematics & Computer Science

1. **Department, Course Number and Title**

   Department of Mathematics & Computer Science, Math 700   Principles of Mathematics

2. **Does this course meet a general education / CUNY core category?**

   This course meets pathways required core: mathematical & quantitative reasoning.

3. **Demonstration of Course Transferability**

   Course transfers to several CUNY colleges. Senior colleges include:
   Brooklyn: Math 1311 – Thinking Mathematically
   College of Staten Island: MTH 102 – Math for Liberal Arts Students
   Hunter: MATH 10000 – Basic Structures of Mathematics
   York: MATH 150 – Mathematics and its Applications

4. **Bulletin Description of Course**

   A basic course in mathematical discovery. Students participate in the development and investigation of topics such as number sequences, calculating devices, extrapolation, mathematical mosaics and curves, probability and topology.

5. **Number of Weekly Class Hours**

   Four hours a week.

6. **Number of Credits**

   3

7. **Prerequisite**

   Passing the CUNY Math Skills Exam.

8. **Justification for Course and Expected Enrollment**

   A. **Enrollment summaries if previously offered as an 82:** N/A
   B. **Projected enrollment:** over 100 students per semester
   C. **Class Limits:** 37
   D. **Frequency course is likely to be offered:** fall and spring
   E. **Role of course in department's curriculum and college's mission:**
   This course aims to provide students with the requisite mathematical skills and quantitative reasoning to solve problems in mathematics and in other fields of study. Students learn to communicate solutions to mathematical problems in written and oral form. The course is designed to give the students an understanding to various approaches to problem solving; interpretation and analysis of quantitative information in other sciences; using fundamental statistical analysis to interpret data presented in graphs, tables, and formulas; and using mathematical modeling to solve real-world problems.

9.   **Course Withdrawals**
           N/A

10.   **Field Work, Internship or Independent Study**
           N/A

11.   **Textbooks**
           Mathematics - A Human Endeavor (Third Edition) by Harold R. Jacobs.

12.   **Required Course for Majors**
           no

13.   **Specify If Course Is Open to Only Selected Students**
           Students who passed CUNY Math Skills Exam.

14.   **What Students Will Know and Be Able To Do Upon Completion of Course**
           Students will understand the fundamental of statistics, statistical tables and graphs, data distribution, measures of variation, and the normal distribution, enabling them to interpret tables, graphs, and formulas, and make statistical inferences.

           Students will have the basic knowledge of the usage of algebraic, numerical, graphical, or statistical methods to draw accurate conclusions and solve mathematical problems.

           Students will know how to represent quantitative problems expressed in natural language in a suitable mathematical format.

           Students will learn effective communication of quantitative analysis or solutions to mathematical problems in written and oral form.

           Students will be able to evaluate solutions to problems for reasonableness using a variety of means, including informed estimation.

           Students will understand principles of mathematical modeling and will understand the application of mathematical models to problems in other fields of study.

15.   **Method of Teaching**
           Instruction will be based upon classroom lectures and homework assignments, or other methodologies that the instructor feels are appropriate, such as group work and student presentations.

16.   **Assignments to Students**
           Homework exercises from each section and teacher-prepared assignments.

17.   **Method of Evaluating Learning**
           May include 60-minute classroom exams, or a combination of quizzes and exams. A departmental 2-hour final exam will be given at the end of the term.

18. **Topical Course Outline**

The following chapters are to be covered:

Sessions 1-6   Chapter 1: **Mathematical Ways of Thinking**: 6 sections plus summary Billiard ball mathematics, inductive reasoning, deductive reasoning, mathematical proo, and proofs of number tricks.

Sessions 7-12 Chapter 2: **Number Sequences:** 6 sections plus summary. Arithmetic and geometric sequences; the binary sequence and binary notation; square, cube, and higher- power sequences; the Fibonacci sequence.

Session 13   Examination #1

Sessions 14-19   Chapter 3: **Functions and Their Graphs:** 6 sections plus summary Descartes and coordinate graphs, functions with line, parabolic and curved graphs, interpolation and extrapolation.

Sessions 20-21   Chapter 4: **Large Numbers and Logarithms:** first two sections. Large numbers and scientific notation.

Sessions 22-25   Chapter 7: **Methods of Counting:** 4 sections and summary. Fundamental counting principle factorials, permutations, permutations of sets containing identical elements, and combinations.

Session 26   Examination #2

Sessions 27-32   Chapter 8: **The Mathematics of Chance:** 6 sections plus summary. Probability, dice games, successive events, binomial probability, Pascal's triangle, complementary probabilities.

Sessions 33-38   Chapter 9: **Introduction to Statistics:** 6 sessions plus summary. Frequency distributions, breaking codes, measures of central tendency and variability, collecting and displaying data.

Session 39   Examination #3

Sessions 40-44   Chapter 10: **Topics in Topology:** 5 sections plus summary. Mathematics of distortion, networks and Euler paths, trees, Moebius strips.

Sessions 45-48   Review, optional exam, supplemental material.

19. Selected Bibliography and Source Materials

[1]   Bello and Kaul , <u>Topics in Contemporary Mathematics</u> , Ninth Edition , Cengage Learning , 2008 , ISBN: 9780618775248

[2]   Bennett and Brigs, <u>Using and Understanding Mathematics: A Quantitative Reasoning Approach</u>, Sixth Edition, Pearson Addison Wesley, 2011 , ISBN: 9781323063460

[3]   Smith , <u>Nature of Mathematics</u> , Twelve Edition , Brooks/Cole Cengage Learning , 2012 , ISBN: 9780538737586

Updated: March 2015