KINGSBOROUGH COMMUNITY COLLEGE
The City University of New York

CURRICULUM TRANSMITTAL COVER PAGE

Department: Department of Mathematics & Computer Science **Date:** 8/01/2020

Title Of Course/Degree/Concentration/Certificate: College Algebra for STEM Majors (MAT 09B0)

Change(s) Initiated: (Please check)

- ☐ Closing of Degree
- ☐ Closing of Certificate
- ☐ New Certificate Proposal
- ☐ New Degree Proposal
- ☒ New Course
- ☐ New 82 Course (Pilot Course)
- ☐ Deletion of Course(s)
- ☐ Change in Degree or Certificate
- ☐ Change in Degree: Adding Concentration
- ☐ Change in Degree: Deleting Concentration
- ☐ Change in Prerequisite, Corequisite, and/or Pre/Co-requisite
- ☐ Change in Course Designation
- ☐ Change in Course Description
- ☐ 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: _____ **Signature, Committee Chairperson:** _____

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

Date Approved: 9/14/2020 **Signature, Department Chairperson:** mary E dawson

Date Approved: 13 Sep 20 **Signature, Department Chairperson:** John Mikalopas

I have reviewed the attached material/proposal

Signature, Department Chairperson: Rina Garmish

Revised/Augl.2018/AK

KINGSBOROUGH
COMMUNITY COLLEGE
★ DREAMS BEGIN HERE ★

TO: Fall 2020 Curriculum Committee

FROM: Department of Mathematics & Computer Science

DATE: 08/01/2020

RE: New Course: College Algebra for STEM Majors (MAT 09B0)

The Department of Mathematics & Computer Science is proposing to add College Algebra for STEM Majors (MAT 09B0), as follows:

ADD:
MAT 09B0- College Algebra for STEM Majors

Rationale for Change:

The proposed course represents a new pedagogical approach to College Algebra, using a lab-based model and more supported interaction for preparing prospective STEM students for success in precalculus.

Students will work in a laboratory setting with an instructor and will be provided hands-on, personalized guidance in the development and fine-tuning of algebraic skills. This approach will facilitate success for students who would not otherwise succeed in College Algebra.

Additionally, this course aligns with the upcoming CUNY transition, effective Fall 2022, to remove courses that follow Elementary Algebra – at Kingsborough MAT R300 – Elementary Algebra II - but precede the first-level Pathways MQR course – at Kingsborough MAT 900 – College Algebra.

Currently students who are Math Proficient enroll as follows:

MAT R300 – Elementary Algebra II **to** MAT 900 – College Algebra **to** MAT 1400 Pre-Calculus.

The new course will allow student to proceed to MAT 1400 a semester earlier:

MAT 9B0 **to** MAT 1400

This course also meets the concerns outlined by CUNY for Algebra Proficiency Standard for Students Pursuing STEM Degrees –which " allows for up to two additional hours of corequisite support in college algebra to develop a strong foundation for further STEM-focuses algebra sequences."

MAT 900 – College Algebra, is 3 credits, 4 hours. The proposed course, MAT 9B0 – College Algebra for STEM Majors, is 3 credits, 0 hours lecture, 6 hours lab. This aligns with CUNY's trajectory as well as Middle States Commission on Higher Education (MCHE) Guidelines for College Credits Assigned for Instructional Hours.

Once the course is in place, the department plans to conduct an analysis of student success, including such factors as grade distribution and particularly Exit Exam performance in MAT 9B as compared/contrasted with those of MAT 9, and assessment of both global and particular essential skills needed for STEM students going forward. One interesting potential avenue for such study will be the relative emphases on specific skill sets which have particular value for different avenues of study within STEM (health sciences vs engineering, for example) with possible future potential for customization within these laboratory-based sections.

The department is hopeful that this new approach will provide much-enhanced student success for our STEM students.

Adjustments to the following STEM degrees are submitted to reflect MAT 9B0 – College Algebra for STEM Majors, under Required Core: Mathematical and Quantitative Reasoning (MQR).

Department of Biological Sciences:

- A.S. Biology
- A.S. Biotechnology

Department of Mathematics and Computer Science:

- A.A.S. Computer Information Systems
- A.S. Computer Science
- A.S. Mathematics

Department of Physical Sciences

- A.S. Chemistry
- A.S. Earth and Planetary Sciences
- A.S. Engineering Science
- A.S. Physics
- A.S. Science for Forensics

Kingsborough Community College

The City University of New York

New Course Proposal Form

1. Department, Course Number, and Title (Speak with Academic Scheduling for assignment of a new course number):

   Department of Mathematics & Computer Science,
   MAT 09B0 – College Algebra for STEM Majors

2. Does this course meet a General Education/CUNY Common Core Pathways Category? ***Note: 82XX (Pilot) courses CANNOT be considered for Pathways**

   - ☐ 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

   If **YES**, complete and submit with this proposal a CUNY Common Core Pathways Submission Form.

3. Describe how this course transfers (required for A.S. Degree course). If A.A.S. Degree course and does not transfer, justify role of course, e.g. describe other learning objectives met.

   Preliminary indications are that students will receive transfer credit for:

   CUNY Pathways course fulfilling the Required Core, Mathematical and Quantitative Reasoning requirement.

   CUNY Pathways course fulfilling the Flexible Core, Scientific World requirement.

4. College Catalog description of course:

   A comprehensive treatment of the following: real numbers, absolute value, integer and rational exponents, polynomial operations, factoring techniques, roots and radicals, linear and quadratic equations, graphing techniques, systems of linear equations, Gaussian elimination. Introduces the study of functions in preparation for the study of calculus and pre-calculus.

   Students who have completed MAT 900 will not receive credit for this course.

   This course is appropriate for STEM majors.

   Credits and Hours Based on *College Credits Assigned for Instructional Hours* - ***Hours are hours per week in a typical 12-week semester** (Please check **ONE** appropriate box below 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:_____

5. Number of Equated Credits in Item #5 _____ (For Developmental Courses ONLY)

6. Course Prerequisites, Corequisites, and Selected Populations (If NONE, please indicate "NONE" for each):

   A. (1) Prerequisites: Successful completion of CUNY Mathematics remediation; or
      (2) Math Proficient per CUNY guidelines.
   B. Corequisite(s): N/A
   C. Pre-/Co-requisite(s): N/A
   D. Open ONLY to selected Students (specify population): N/A

7. Brief rationale to justify proposed course, include:
   A. Enrollment Summary if previously offered as an 82XX-Pilot Course (include Complete 4-digit 82 course number): N/A
   B. Projected Enrollment: 150 - 300 students per semester.
   C. Suggested Class Limits: 25 students
   D. Frequency course is likely to be offered: Course will be offered every semester
   E. Role of course in Department's Curriculum and College's Mission:
      Mathematics 09B0 is designed to provide students with an understanding of algebraic concepts, and skill and practice in the manipulation and utilization of these concepts. Such a background is essential for later mastery of a wide variety of courses in mathematics, computer studies, the sciences, and other areas.

8. List course(s), if any, to be withdrawn when course is adopted (Note: this is NOT the same as deleting a course): N/A

9. If course is an internship, independent Study, or the like, provide an explanation as to how the student will earn the credits awarded. The credits awarded should be consistent with the student efforts required in a traditional classroom setting. N/A

10. Proposed textbook(s) and/or other required instructional materials(s):

    Lynn Marecek, Santa Ana College, *Intermediate Algebra*, OpenStax.org, 2017

Intermediate Algebra from OpenStax, Print ISBN 0998625728, Digital ISBN 1947172263, openstax.org/details/intermediate-algebra

11. Is the course REQUIRED for a Major, Concentration, or Certificate? Yes

If **YES**, – Submit a separate Curriculum Transmittal Cover Page indicating a "Change in Degree or Certificate" as well as a Proposal that MUST include a rationale for inclusion of the course within the curriculum and the following additional information:

A. "Current" Degree with all proposed deletions (strikeouts) and additions (bolded) clearly indicated.
B. "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

The Following NYSED Guidelines must be adhered to for **ALL** Degree Programs:
45 credits of Liberal Arts Course work for an Associate of Arts Degree (A.A.)
30 credits of Liberal Arts Course work for an Associate of Science Degree (A.S.)
20 credits of Liberal Arts Course work for an Applied Associate of Science (A.A.S.)

The following degrees will be affected:

Department of Biological Sciences:

- A.S. Biology
- A.S. Biotechnology

Department of Mathematics and Computer Science:

- A.A.S. Computer Information Systems
- A.S. Computer Science
- A.S. Mathematics

Department of Physical Sciences

- A.S. Chemistry
- A.S. Earth and Planetary Sciences
- A.S. Engineering Science
- A.S. Physics
- A.S. Science for Forensics

12. Explain what students will know and be able to do upon completion of course:

Students will be able to: evaluate algebraic expressions; solve linear equations; use the concepts of inequality symbols, absolute values, and distance on the number line; find the domain of an expression; perform basic algebraic operations on terms and polynomials; understand and use special product formulas; and master and use techniques of factoring.

Students will have developed skills in: manipulating and simplifying algebraic fractions; understanding negative exponents and applying exponent rules to them; understanding square, cube, and higher roots; simplifying roots and radicals and performing algebraic operations on them; rationalizing monomial and binomial denominators; understanding rational exponents; and applying the Pythagorean Theorem.

Students will: understand the distinction between identities and conditional equations, and the concept

of solution sets; be able to solve quadratic equations by factoring, by completing the square, and by the quadratic formula; understand interval notation and be able to relate it to inequality notation and to graphs on the number line; understand and solve linear inequalities; and be able to apply the distance, midpoint, and slope formulas in the plane.

Students will: understand graphs of equations in two variables, and intercepts of graphs; be able to sketch graphs of linear equations; know how to determine slope and intercepts of a line directly from the equation; find equations of parallel and perpendicular lines; find both standard and general forms of the equation of a circle, and use either form to find the center and radius; be able to solve two linear equations in two variables.

13. Methods of Teaching: Laboratory work and other student assignments, including in addition any combination of the following: demonstrations, group work, website or email interactions and/or assignments, practice in application skills and the like.

    Mathematics 09B0 is taught through lab work and practice with designated curricular concepts, skills and procedures, combined with homework assignments designed to improve and solidify student understanding and mastery of the aforementioned.

14. Assignments to students:

    Assignments are taken from the textbook and are chosen at the discretion of the instructor.

15. Describe method of evaluating learning specified in #14 – include percentage breakdown for grading. If a Developmental Course, include how the next level course is determined as well as Next Level Placement.

    Evaluation is conducted as follows:

Homework/laboratory assignments:	30%
In-class exams:	35%
Departmental Exit Examination:	35%

    A grade of 62.5% (25/40) on the Exit Exam is required in order for students to pass the course. This will be deemed a necessary, but not necessarily sufficient criterion for passing the course.

16. Topical Course Outline for the 12-week semester. This should be specific regarding topics covered, learning activities and assignments:

WEEKS	Topics	Learning Objectives	Text Exercises
WEEK 1 **Hrs** **1** **2**	**Chapter 2: Solving Linear Equations** 2.1 Use a General Strategy to Solve Linear Equations	By the end of this section, students will be able to: *Solve linear equations using a general strategy *Classify equations *Solve equations with fraction or decimal coefficients	p.111-113: all
1	2.3 Solve a Formula for a Specific Variable	By the end of this section, students will be able to: *Solve a formula for a specific variable	p.144-145: problems 165-193 odd
1	2.5 Solve Linear Inequalities	By the end of this section, students will be able to: *Graph inequalities on the number line *Solve linear inequalities	p.183-184: problems 296-337

1	2.6 Solve Compound Inequalities	By the end of this section, students will be able to: *Solve compound inequalities with "and" *Solve compound inequalities with "or" (*Solve applications with compound inequalities)	p.195-197: problems 376-425, (429, 433)
WEEK 2 Hrs **1**	2.7 Solve Absolute Value Inequalities	By the end of this section, students will be able to: *Solve absolute value equations *Solve absolute value inequalities with "less than"	p.208-209: all
1 **1**	**Review Chapter 2** **Quiz #1**		p.215-222: problems 568-582, 593-603, 606-620, 625-643
1	**Chapter 5: Polynomials and Polynomial Functions** 5.1 Add and Subtract Polynomials	By the end of this section, students will be able to: *Determine the degree of polynomials *Add and subtract polynomials *Evaluate a polynomial function for a given value	p.497-499: problems 1-66

1	5.2 Properties of Exponents and Scientific Notation	By the end of this section, students will be able to: *Simplify expressions using the properties for exponents *Use the definition of a negative exponent	p.520-523: problems 81-161
1	5.3 Multiply Polynomials	By the end of this section, students will be able to: *Multiply monomials *Multiply a polynomial by a monomial *Multiply a binomial by a binomial *Multiply a polynomial by a polynomial *Multiply special products	p.536-538: problems 178-277
WEEK 3 Hrs **2**	5.4 Dividing Polynomials	By the end of this section, students will be able to: *Dividing monomials *Dividing a polynomial by a monomial *Dividing polynomials using long division *Dividing polynomials using synthetic division	p.551-552: problems 288-323
1 **1**	**Review Chapter 5** **Quiz #2**		p.558-562: problems 342-364, 371-419, 430-480 p.564: problems 487-580

1	**Chapter 6: Factoring** 6.1 Greatest Common Factor and Factor by Grouping	By the end of this section, students will be able to: *Find the greatest common factor of two or more expressions *Factor the greatest common factor from a polynomial *Factor by grouping	p.572-573: problems 1-56
1	6.2 Factor Trinomials	By the end of this section, students will be able to: *Factor trinomials of the form $x^2 + bx + c$ *Factor trinomials of the form $ax^2 + bx + c$ using trial and error *Factor trinomials of the form $ax^2 + bx + c$ using the 'ac' method	p.589-590: problems 61-150
WEEK 4 Hrs **1**	6.3 Factor Special Products	By the end of this section, students will be able to: *Factor perfect square trinomials *Factor differences of squares *Factor sums and differences of cubes	p.603-604: problems 159-228
1	6.4 General Strategy for Factoring Polynomials	By the end of this section, students will be able to: *Recognize and use the appropriate method to factor a polynomial completely	p.613: all

1 **1**	**Review Chapter 6** **Quiz #3**		p.634-636: problems 337-436 p.638: problems 445-458
1 **1**	**Review I - Chapters 2, 5 & 6** **EXAM I**		
WEEK 5 Hrs **2**	**Chapter 7: Rational Expressions and Functions** 7.1 Multiply and Divide Rational Expressions	By the end of this section, students will be able to: *Determine the values for which a rational expression is undefined *Simplify rational expressions *Multiply rational expressions *Divide rational expressions	p.651-653: problems 1-58
2	7.2 Add and Subtract Rational Expressions	By the end of this section, students will be able to: *Add and subtract rational expressions with a common denominator *Add and subtract rational expressions whose denominators are opposites *Find the least common denominator of rational expressions *Add and subtract rational expressions with unlike denominators *Add and subtract rational functions	p.667-668: problems 75-142

1	7.3 Simplify Complex Rational Expressions	By the end of this section, students will be able to: *Simplify a complex rational expression by writing it as division *Simplify a complex rational expression by using the LCD	p.680-681: problems 151-194
1	7.4 Solve Rational Equations	By the end of this section, students will be able to: *Solve rational equations *Solve a rational equation for a specific variable	p.694: problems 197-226 p.695: problems 235-250
WEEK 6 Hrs **1**	7.5 Solve Applications with Rational Equations	By the end of this section, students will be able to: *Solve proportions	p.714: problems 253-262
1 **1**	**Review Chapter 7** **Quiz #4**		p.734-736: problems 377-422; p.737-738: problems 427-440, 443-452 p.741: problems 483-494

1	**Chapter 8: Roots and Radicals** 8.1 Simplify Expressions with Roots	By the end of this section, students will be able to: *Simplify expressions with roots *Estimate and approximate roots *Simplify variable expressions with roots	p.755-756: problems 1-50
2	8.2 Simplify Radical Expressions	By the end of this section, students will be able to: *Use the Product Property to simplify radical expressions *Use the Quotient Property to simplify radical expressions	p.771-773: problems 55-114
WEEK 7 Hrs **1**	8.3 Simplify Rational Exponents	By the end of this section, students will be able to: *Simplify expressions with $a^{1/n}$ *Simplify expressions with $a^{m/n}$ *Use the properties of exponents to simplify expressions with rational exponents	p.786-788: problems 119-158
1	8.4 Add, Subtract, and Multiply Radical Expressions	By the end of this section, students will be able to: *Add and subtract radical expressions *Multiply radical expressions *Use polynomial multiplication to multiply radical expressions	p.797-798: problems 165-214

1	8.5 Divide Radical Expressions	By the end of this section, students will be able to: *Divide radical expressions *Rationalize a one term denominator *Rationalize a two term denominator	p.810: problems 245-262 p.811: problems 271-282
1 **1**	**Review Chapter 8** **Quiz #5**		p.851-854: problems 481-532 & 535-537 p.857: problems 579-595
1 **WEEK 8 Hrs** **1**	**Review II - Chapters 7 & 8** **EXAM II**		
1	6.5 Polynomial Equations	By the end of this section, students will be able to: *Use the Zero Product Property *Solve quadratic equations by factoring	p.627: problems 277-312
3	**Chapter 9: Quadratic Equations and Functions** 9.1 Solve Quadratic Equations Using the Square Root Property	By the end of this section, students will be able to: *Solve quadratic equations of the form $ax^2 = k$ using the Square Root Property *Solve quadratic equations of the form $a(x - h)^2 = k$ using the Square Root Property	p.869-870: problems 1-68

1	2.3 Solve a Formula for a Specific Variable	*Use Pythagorean Theorem	p.145: problems 203-206
WEEK 9 **Hrs** **2**	9.2 Solve Quadratic Equations by Completing the Square	By the end of this section, students will be able to: *Complete the square of a binomial expression *Solve quadratic equations of the form $x^2 + bx + c = 0$ by completing the square *Solve quadratic equations of the form $ax^2 + bx + c = 0$ by completing the square	p.885: problems 71-110
1	9.3 Solve Quadratic Equations Using the Quadratic Formula	By the end of this section, students will be able to: *Solve quadratic equations using the Quadratic Formula *Use the discriminant to predict the number and type of solutions of a quadratic equation *Identify the most appropriate method to use to solve a quadratic equation	p.898-899: problems 113-153
2 **1**	**Review Chapter 9** **Quiz #6**		p.982-983: problems 395-454 p.988: problems 529-535

WEEK 10 **Hrs** **2**	**Chapter 3: Graphs and Functions** **Lab:** 3.1 Graph Linear Equations in Two Variables	By the end of this section, students will be able to: *Plot points in a rectangular coordinate system *Graph a linear equation by plotting points *Graph vertical and horizontal lines *Find the x- and y-intercepts *Graph a line using the intercepts	p.250-253: all
2	3.2 Slope of a Line	By the end of this section, students will be able to: *Find the slope of a line *Graph a line given a point and the slope *Graph a line using its slope and intercept *Choose the most convenient method to graph a line *Graph and interpret applications of slope–intercept *Use slopes to identify parallel and perpendicular lines	p.274-278: all
2	3.3 Find the Equation of a Line	By the end of this section, students will be able to: *Find an equation of the line given the slope and y-intercept *Find an equation of the line given the slope and a point *Find an equation of the line given two points	p.291-294: all

		*Find an equation of a line parallel to a given line *Find an equation of a line perpendicular to a given line	
WEEK 11 **Hrs** **1** **1**	 **Review Chapter 3** **Quiz #7**		p.353-358: problems 391-447 odd, & 450-477
2	**Chapter 11: Conics** **Lab:** 11.1 Distance and Midpoint Formulas; Circles	By the end of this section, students will be able to: *Use the Distance Formula *Use the Midpoint Formula *Write the equation of a circle in standard form *Graph a circle	p.1082-1083: problems 1-48
1 **1**	**Review Chapter 11** **Quiz #8**		p.1155-1156: problems 244-263 p.1160: problems 327-331

WEEK 12 **Hrs** **2**	**Chapter 4: Systems of Linear Equations** 4.1 Solve Systems of Linear Equations with Two Variables	By the end of this section, students will be able to: *Determine whether an ordered pair is a solution of a system of equations *Solve a system of linear equations by graphing *Solve a system of equations by substitution *Solve a system of equations by elimination *Choose the most convenient method to solve a system of linear equations	p.385-387: problems 1-67
1 **1**	**Review Chapter 4** **Quiz #9**		p.479: problems 328-348 p.485: problems 407-410
2	**FINAL EXAM REVIEW**		

17. Selected Bibliography and Source materials:

i. Bennet, *Using and Understanding Mathematics: A Quantitative Reasoning Approach*, 6th Edition, Pearson, 2014.
ii. Aufmann, *Mathematical Thinking and Quantitative Reasoning*, 1st Edition, Cengage Learning, 2007.
iii. Johnson, *Mathematics: A Practical Odyssey*, 8th Edition, Brooks Cole, 2015.
iv. Scott, *Cornerstones of Algebra: Problem Solving, Quantitative Reasoning, and Critical Thinking***,** 1st Edition, Kendall Hunt Publishing, 2012.
v. Sons, Nicholls, and Stephen, *Mathematical Thinking and Quantitative Reasoning,* 5th Edition, Kendall Hunt Publishing, 2012.
vi. Triola, *Elementary Statistics,* 12th Edition, Pearson, 2012.
vii. Bluman, *Elementary Statistics: A Step-by-Step Approach,* 9th Edition, McGraw-Hill Education, 2013.
viii. Larson and Farber, *Elementary Statistics: Picturing the World,* 6th Edition, Pearson, 2014.
ix. Navidi and Monk, *Elementary Statistics,* 2nd Edition, McGraw-Hill 2015.
x. Tussy, *Elementary Algebra,* 5th Edition, Brooks Cole, 2012.
xi. Bittinger, Ellenborgen and Johnson, *Elementary Algebra, Concepts & Applications*, 9th Edition, Pearson, 2012.
xii. Jacobs, *Elementary Algebra*, Revised Edition, Master Books, 2016.
xiii. Rakes, Valentine, McGatha and Ronau, *Methods of Instructional Improvement in Algebra: A Systematic Review and Meta-Analysis,* Review of Educational Research, Volume: 80 issue: 3, page(s): 372-400, First Published September 1, 2010, https://doi.org/10.3102/0034654310374880,
xiv. Blitzer, *College Algebra*, 5th Edition, Pearson, 2010.
xv. Fink, L.D. *Creating Significant Learning Experiences: An Integrated Approach to Designing College Courses*. San Francisco: Jossey-Bass, 2003.
xvi. Sullivan, *College Algebra*, 10th Edition, Pearson, 2016.
xvii. Jacobs, *Elementary Algebra*, 0th Edition, Freeman, 1979.
xviii. Fair, *Effectiveness of a Corequisite Delivery Model for Developmental Mathematics,* Eastern Kentucky University Encompass, January 2017.

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