**Assessment 2: Template for Course Grades and/or Transcript Analysis**

**(2012 NCTM CAEP Elementary Math Specialists Standards)**

**Instructions**

Completion of this form provides the required information for using grades and/or transcript analysis as evidence of candidates’ content knowledge. This document is designed to be editable so that programs can use only sections that are applicable to program type. Programs should not change the structure of the tables provided, but can delete tables or lines that are not needed. Boxes will expand as needed.

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| **Institution Name** |  |
| **Program Name** |  |
| **Program Type (e.g., Baccalaureate or M.Ed.)** |  |

*Program of Study and Course Descriptions:* A complete program of study and set of official course descriptions for all required courses to be used in this evaluation should be attached separately in Section I of the program report.

**Part 1.** *Description of the Assessment*

Identify the required mathematics major courses chosen for inclusion and supply a rationale for the selection of this particular set of mathematics or mathematics education courses.

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*Transcript Review Process for Post-Bac and Masters Programs*

The following questions should be addressed in cases where a program is using a transcript review for certification. The transcript review form should be attached in Section I of the program report. This section can be deleted for undergraduate only programs.

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| In cases of a transcript review process, describe how the program ensures that the courses being reviewed have the necessary content to be equivalent to the institutional course and that the mathematical domain competencies and mathematical processes indicated are included. This description should include the process used when course titles do not clearly align or courses are taught within related fields. |  |
| What is the limit by which coursework must have been completed? (e.g., within the last 3 years) |  |
| How does the program ensure that graduate candidates have appropriate experience with the use of technology and representational tools within the learning of mathematics? |  |
| When a candidate needs remediation, what is the process for ensuring the candidate receives the appropriate remediation before program completion? |  |

**Part 2.** *Course Alignment with Elements of* *NCTM CAEP Standards (2012)* *and with NCTM CAEP Mathematics Content for Elementary Math Specialists*

*Technology and Representational Tools Including Concrete Models by Competency*

Describe technology and representational tools, including concrete models, used in **required** courses that address competencies. Name the course, tools, and competency by code (e.g., B.1.3) in the discussion of how candidates have multiple opportunities to learn with technology and representational tools across domains.

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| **C.1 Number and Operations** |  |
| **C.2 Algebra** |  |
| **C.3 Geometry and Measurement** |  |
| **C.4 Statistics and Probability** |  |

*Rationale for Content Preparation through Coursework for Standard 1*

All Elementary Math Specialists mathematics teachers should be prepared with depth and breadth in the following mathematical domains: Number, Algebra, Geometry, Trigonometry, Statistics, Probability, Calculus, and Discrete Mathematics. All teachers certified as Elementary Math Specialists should know, understand, teach, and be able to communicate their mathematical knowledge with the breadth of understanding reflecting the following competencies for each of these domains. The program should match **required** coursework to individual competencies within each domain. The rationale should specifically provide evidence and discussion that justifies how the competency indicated in column 1 is addressed in the specific course(s).

| **C.1. Number and Operations** To be prepared to develop student mathematical proficiency, all Elementary Math Specialists should know the following topics related to number and operations with their content understanding and mathematical practices supported by appropriate technology and varied representational tools, including concrete models. | |
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|  | **Required Course Number(s) and Name(s) with a specific description of how the indicated competency is addressed in the course(s)** |
| C.1.1 Counting and cardinality, comparing and ordering, understanding the structure of the base ten number system with particular attention to place value, order of magnitude, one-to-one correspondence, properties, and relationships in numbers and number systems – whole numbers, integers, rationals, irrationals, and reals |  |
| C.1.2 Arithmetic operations (addition, subtraction, multiplication, and division) including mental mathematics and standard and non-standard algorithms, interpretations, and representations of numbers – whole numbers, fractions, decimals, integers, rationals, irrationals, and reals |  |
| C.1.3 Fundamental ideas of number theory – divisors, factors and factorization, multiples, primes, composite numbers, greatest common factor, and least common multiple |  |
| C.1.4 Quantitative reasoning and relationships that include ratio, rate, proportion, and the use of units in problem situations |  |
| C.1.5 Historical development and perspectives of number, operations, number systems, and quantity including contributions of significant figures and diverse cultures |  |

| **C.2. Algebra** To be prepared to develop student mathematical proficiency, all Elementary Math Specialists should know the following topics related to algebra with their content understanding and mathematical practices supported by appropriate technology and varied representational tools, including concrete models. | |
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|  | **Required Course Number(s) and Name(s) with a specific description of how the indicated competency is addressed in the course** |
| C.2.1 Algebraic notation, symbols, expressions, equations, inequalities, and proportional relationships, and their use in describing, interpreting, and modeling relationships and operations |  |
| C.2.2 Function classes including constant, linear, polynomial, exponential, and absolute value and how the choices of parameters determine particular cases and model specific situations |  |
| C.2.3 Functional representations (tables, graphs, equations, descriptions, and recursive definitions), characteristics (e.g., zeros, average rates of change, domain and range), and notations as a means to describe, interpret, and analyze relationships and to build new functions |  |
| C.2.4 Patterns of change in linear, quadratic, polynomial, and exponential functions and in proportional and inversely proportional relationships and types of real-world relationships these functions can model |  |
| C.2.5 Historical development and perspectives of algebra including contributions of significant figures and diverse cultures |  |

| **C.3. Geometry and Measurement** To be prepared to develop student mathematical proficiency, all Elementary Math Specialists should know the following topics related to geometry and measurement with their content understanding and mathematical practices supported by appropriate technology and varied representational tools, including concrete models. | |
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|  | **Required Course Number(s) and Name(s) with a specific description of how the indicated competency is addressed in the course** |
| C.3.1 Core concepts including angle, parallel, and perpendicular, and principles of Euclidean geometry in two and three dimensions |  |
| C.3.2 Transformations including dilations, translations, rotations, reflections, glide reflections; compositions of transformations; and the expression of symmetry and regularity in terms of transformations |  |
| C.3.3 Congruence, similarity and scaling, and their development and expression in terms of transformations |  |
| C.3.4 Basic geometric figures in one, two, and three dimensions (line segments, lines, rays, circles, arcs, polygons, polyhedral solids, cylinders, cones, and spheres) and their elements (vertices, edges, and faces) |  |
| C.3.5 Identification, classification into categories, visualization, two- and three-dimensional representations, and formula rationale and derivation (perimeter, area, and volume) of two- and three-dimensional objects (triangles; classes of quadrilaterals such as rectangles, parallelograms, and trapezoids; regular polygons; rectangular prisms; pyramids; cones; cylinders; and spheres) |  |
| C.3.6 Geometric measurement and units (linear, area, surface area, volume, and angle), unit comparison, and the iteration, additivity, and invariance related to measurements |  |
| C.3.7 Geometric constructions, axiomatic reasoning, and making and proving conjectures about geometric shapes and relations |  |
| C.3.8 Coordinate geometry including the equations of lines and algebraic proofs (e.g., Pythagorean Theorem and its converse) |  |
| C.3.9 Historical development and perspectives of geometry and measurement including contributions of significant figures and diverse cultures |  |

| **C.4. Statistics and Probability** To be prepared to develop student mathematical proficiency, all Elementary Math Specialists should know the following topics related to statistics and probability with their content understanding and mathematical practices supported by appropriate technology and varied representational tools, including concrete models. | |
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|  | **Required Course Number(s) and Name(s) with a specific description of how the indicated competency is addressed in the course** |
| C.4.1 Statistical variability and its sources and the role of randomness in statistical inference |  |
| C.4.2 Construction and interpretation of graphical displays of univariate and bivariate data distributions (e.g., box plots and histograms), summary measures (mean, median, mode, interquartile range, and mean absolute deviation) and comparison of distributions of univariate data, and exploration of categorical (discrete) and measurement (continuous) data |  |
| C.4.3 Empirical and theoretical probability for both simple and compound events |  |
| C.4.4 Random (chance) phenomena and simulations |  |
| C.4.5 Historical development and perspectives of statistics and probability including contributions of significant figures and diverse cultures |  |

*Rationale for Standards other than Standard 1 through Coursework*

Elements from Standard 2 are included for your convenience, additional elements can be added as needed in the same manner and/or elements from Standard 2 can be deleted.

| **Element number** | **Required Course Number(s) and Name(s) with a specific description of how the indicated element is addressed in the course(s)** |
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| **2a)** Use problem solving to develop conceptual understanding, make sense of a wide variety of problems and persevere in solving them, apply and adapt a variety of strategies in solving problems confronted within the field of mathematics and other contexts, and formulate and test conjectures in order to frame generalizations. |  |
| **2b)** Reason abstractly, reflectively, and quantitatively with attention to units, constructing viable arguments and proofs, and critiquing the reasoning of others; represent and model generalizations using mathematics; recognize structure and express regularity in patterns of mathematical reasoning; use multiple representations to model and describe mathematics; and utilize appropriate mathematical vocabulary and symbols to communicate mathematical ideas to others. |  |
| **2c)** Formulate, represent, analyze, and interpret mathematical models derived from real-world contexts or mathematical problems. |  |
| **2d)** Organize mathematical thinking and use the language of mathematics to express ideas precisely, both orally and in writing to multiple audiences. |  |
| **2e)** Demonstrate the interconnectedness of mathematical ideas and how they build on one another and recognize and apply mathematical connections among mathematical ideas and across various content areas and real-world contexts. |  |
| **2f)** Model how the development of mathematical understanding within and among mathematical domains intersects with the mathematical practices of problem solving, reasoning, communicating, connecting, and representing. |  |
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**Part 3.** *Grade Policy and Minimum Expectation*

Submit grading policy/definitions of grades that are used by the institution or program and the minimum expectation for candidate performance (e.g., candidates must achieve a C or better in required coursework).

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**Part 4.** *Data Tables*

Select the appropriate combination of data tables. The number of completers in the data tables for each academic year must be consistent with the number of completers reported in Section I of the program report.

Data Table A (Coursework Taken at Submitting Institution)

Data Table A is to be used for undergraduate and graduate completers whose mathematics and/or mathematics education coursework is mostly completed at the submitting institution. Mean course grades and grade distribution (range) in selected required mathematics or mathematics education courses, number of undergraduate or graduate completers, and percentage of completers meeting the minimum expectation disaggregated by level (e.g., undergraduate or graduate program completers) and by academic year must be included.

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| **Grades in Required Mathematics and/or Mathematics Education Courses**  **Elementary Math Specialists**  **Indicate Undergraduate or Graduate Program Completers** | | | | | | |
| **Grade Scale:** Insert grade point values associated with each letter grade. | | | | | | |
|  | **INSERT ACADEMIC YEAR FOR COHORT GROUP** | | | **INSERT ACADEMIC YEAR FOR COHORT GROUP** | | |
| **Course Number and Name** | **Mean Course Grade\* and (Range)** | **Number of Completers** | **% of Completers Meeting Minimum Expectation**  **(INDICATE MINIMUM GRADE EXPECTATION)** | **Mean Course Grade\* and (Range)** | **Number of Completers** | **% of Completers Meeting Minimum Expectation**  **(INDICATE MINIMUM GRADE EXPECTATION)** |
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Data Table B (Mathematics Major Coursework GPA):

Data Table B is to be used for both undergraduate and graduate program completers to report overall mathematics GPAs across all required mathematics major courses listed on the plan of study or transcript review form submitted in Section I of the program report. The table should be duplicated for each program reported. Data Table B may replace Data Table A for a graduate level program that relies on coursework taken at another institution. Data disaggregated by academic year on completers’ mean grade point average (GPA) and grade distribution (range) across all required undergraduate mathematics major courses, number of completers, and percentage of completers meeting the minimum expectation must be included.

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| **Mean GPA in Required Mathematics Major Courses for Elementary Math Specialists Completers**  **Indicate Program Type (Post-Baccalaureate or MAT or M. Ed.) Program** | | | |
| **Grade Scale:** Insert grade point values associated with each letter grade. | | | |
| **Academic Year** | **Mean GPA and**  **(Range)** | **Number of Completers** | **% of Completers Meeting Minimum Expectation**  **(INDICATE MINIMUM GRADE EXPECTATION)** |
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Data Table C (Graduate Program Transcript Analysis Results):

Data Table C is to be used to report transcript analysis results for a graduate level program that relies on coursework taken at another institution. Data disaggregated by academic year on the number of completers for whom a transcript analysis was done, how many completers required remediation, nature of remediation (e.g., coursework or special project) by course or content, and the number of completers, if any, who received waivers (explanation required) from the process must be included.

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| **Transcript Analysis Results for Elementary Math Specialists Completers**  **Indicate Program Type (Baccalaureate, Post-Baccalaureate or MAT or M. Ed.) Program** | | | | | |
| **Academic Year** | **Number of Completers** | **Number Requiring Remediation** | **Nature of Remediation by Course or Content** | **Number Receiving Waivers** | **Waiver Explanation** |
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**Part 5.** *Analysis*

Provide an analysis of grade data. An explanation of any inconsistencies within the data tables must accompany the data tables.

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