WKU®

Program Review Document

Preparation Program: *Mathematics (Secondary)*

Date Submitted: *April 2017*

Certification Level:	☐ B-P ☐ P-5 ☐ 5-9 ☐ 5-12 ☒ 8-12 ☐ P-12
Preparation Level:	☒ Initial
Modes of Delivery:	☐ Face-to-Face Only ☐ Online Only ☒ Hybrid
Degree Type:	☒ Undergraduate ☐ Graduate (MAT) ☒ Undergraduate – Cert Only ☐ Option 6
Program Codes:	**728 774**
University Catalog:	https://www.wku.edu/undergraduatecatalog/ http://catalog.wku.edu/graduate/
WKU Quality Assurance Document:	http://www.wku.edu/cebs/caep/

SYLLABI: All Professional Education, Methods Syllabi, and a Sampling of Content Area Syllabi are available on the WKU website http://www.wku.edu/cebs/peu/epsb_prds.php.

Program Description

Students seeking certification in secondary mathematics education (grades 8-12) must complete both the science and mathematics education program (SMED) and the mathematics major. This combination of programs leads to a bachelor's degree with two majors: science/math education and mathematics. The SMED program is designed to give students sufficient pedagogical knowledge to teach math. The mathematics major requires 35 hours in mathematics beginning with Calculus and Analytic Geometry I. The program leads to initial certification for secondary mathematics teachers. A few initial professional education courses (SMED 101 and 102) are offered in Glasgow. Efforts are underway to extend the offering of these and other SMED courses to Owensboro and Elizabethtown. With rare exceptions, content courses are taught on the main WKU campus.

- **Core Education Courses**

SMED 101. STEP 1: INTRODUCTION TO INQUIRY-BASED APPROACHES TO TEACHING. (3 hrs) Introduction to theory and practice necessary to design and deliver high quality inquiry-based math and science instruction. Students explore and practice the guided inquiry process, create lesson plans and implement them during visits to elementary classrooms. Fieldwork required.

SMED 102. STEP 2: INTRODUCTION TO INQUIRY-BASED LESSON DESIGN.
(3 hrs) Further exploration of inquiry-based learning experiences, developing skills designing, teaching, analyzing, and assessing inquiry-based math and science lessons. Students design lesson plans and implement them during visits to middle school classrooms. Fieldwork required.

SMED 310 - KNOWING AND LEARNING IN MATHEMATICS AND SCIENCE (3 hours): Introduction to theories and principles of cognition and learning with emphasis on knowing and learning in math and science. Introduction to research on learning, memory, individual development, motivation and

intelligence. Applications of learning theory will be explicitly tied to design of lesson plans, instruction and assessment.

SMED 320 - CLASSROOM INTERACTIONS (3 hours): Designed to expand student's abilities to understand how learning theories are applied in instructional settings as students develop, implement and evaluate activities and strategies for teaching diverse students equitably. Fieldwork required;

SMED 340. PERSPECTIVES ON MATHEMATICS AND SCIENCE. (3 hrs)
Introduction to the historical, social, and philosophical implications of math and science through investigations of pivotal experiments and findings. Includes integrated laboratory experiences that replicate significant discoveries.

SMED 360. RESEARCH METHODS FOR MATH AND SCIENCE TEACHERS. (3 hrs)
Laboratory-based introduction to the tools and techniques used by scientists and mathematicians to further an understanding of the natural world and application of this knowledge to math and science education. Students will design and carry out laboratory investigations, and present written and oral reports of results.

SMED 470. PROJECT-BASED INSTRUCTION. (3 hrs) Methods, techniques, and technologies used to implement and assess problem-based investigations in math and science classrooms. Fieldwork required.

SMED 489. SMED STUDENT TEACHING SEMINAR. (3 hrs) Provides a bridge between the theory and practice of math and science teaching. Methods, techniques, technologies and issues pertinent to math and science instruction in middle grade and secondary classrooms. Field experiences in public schools and/or other appropriate settings away from campus are required.

SEC 490 – STUDENT TEACHING (10 hours): This is a 12-week assignment in a middle school classroom as a part of the Professional Semester taken in the senior year.

- **Core Content Courses**

MATH 136: CALCULUS I--A course in one variable calculus including topics from analytic geometry. Limits, derivatives, integration, and applications of polynomial, rational, trigonometric and transcendental functions. Includes lecture and recitation. (Graphing calculator required.)

MATH 137: CALCULUS II--A second course in one-variable calculus including topics from analytic geometry. Methods of integration, sequences and series, polar and parametric functions. Includes lecture and recitation.

MATH 237 – MULTIVARIABLE CALCULUS (4) Prerequisites: MATH 137 with a grade of "C" or better. Topics in real-valued functions of several variables including directional derivatives, implicit functions, gradient, Taylor's Theorem, maxima, minima, and Lagrange multipliers. Differential calculus of vector-valued functions including chain rule and Inverse Function Theorem. Multiple integrals, line integrals, surface integrals, Stokes' and Green's Theorems.

MATH 304: Functions, Applications and Explorations--In-depth study of mathematical topics that are used in teaching pre-calculus and transition-to-calculus courses at the secondary school level. Modeling with linear, exponential, and trigonometric functions; curve fitting; discrete and continuous models. (Course fee required.)

MATH 307 - INTRODUCTION TO LINEAR ALGEBRA. (3) Prerequisites: MATH 136 with an A or MATH 142 with an A or MATH 137 with a C or better. Systems of linear equations, matrix algebra, vector spaces, inner product spaces, linear transformations, eigenvectors, quadratic forms.

MATH 310 - INTRODUCTION TO DISCRETE MATHEMATICS. (3) Prerequisite: MATH 137 with a grade of "C" or better. Introduction to discrete topics. Development of skills in abstraction and generalization. Set theory, functions and relations, mathematical induction, elementary propositional logic, quantification, truth tables, validity; counting techniques, pigeonhole principle, permutations and combinations; recurrence relations and generating functions; elementary graph theory, isomorphisms, trees.

MATH 317 - INTRODUCTION TO ALGEBRAIC SYSTEMS. (3) Prerequisites: MATH 307 and MATH 310 with grades of C or better. Introduction to groups, rings, polynomial rings, integral domains, and fields

MATH 323 – GEOMETRY I. (3) Prerequisite: MATH 307 with a grade of "C" or better. Beginning with a re-examination of elementary Euclidean geometry, the course includes a study of absolute plane geometry and the parallel postulate, which leads to an axiomatic treatment of hyperbolic geometry and related topics.

Math 498 – SENIOR SEMINAR. (1-3) Prerequisites: MATH 237 and MATH 317 with grades of C or better, and senior standing or permission of instructor. Students will study articles in current mathematical journals or undertake independent investigations in mathematics. Written and oral presentations are required.

STAT 301. INTRODUCTORY PROBABILITY AND APPLIED STATISTICS. (3) Prerequisite: MATH 136 or MATH 142 with a grade of "C" or higher. A calculus based introduction to applied statistics, with emphasis on analysis of real data. Curve fitting, probability models, estimation and testing for means and proportions, quality control; use of computers for data analysis and simulation.

- **Restricted Electives**

MATH 405 – NUMERICAL ANALYSIS I. (3) Prerequisites: MATH 237 or 307 or 310, and CS 180 or CS 146 all with grades of C or better. Computer arithmetic, roots of equations, polynomial approximation and interpolation, numerical differentiation and integration. Computer solutions of problems will be required. Equivalent to CS 405.

MATH 406 - NUMERICAL ANALYSIS II. (3) Prerequisites: MATH 237, 307, 331, and either MATH 405 or CS 405, all with grades of C or better. The solution of linear systems by direct and iterative methods, matrix inversion, the calculation of eigenvalues and eigenvectors of matrices. Initial and boundary value problems in ordinary differential equations. Computer solution of problems will be required.

MATH 409 – HISTORY OF MATHEMATICS. (3) Prerequisite: Six hours of approved mathematics courses at the 300 and / or 400 level or permission of instructor. History of mathematics from ancient times through the development of calculus, with emphasis on famous problems. Provides knowledge and appreciation useful in the classroom. This course cannot be accepted as part of the 35-hour requirement for the non-certifiable mathematics major. Term papers will be required.

MATH 415 - ALGEBRA AND NUMBER THEORY. (3) Prerequisite: MATH 315 or 317 with a grade of "C" or better. An integrated survey of modern algebra and number theory. Topics include number systems, divisibility, congruences, groups and their application to number theory.

MATH 417 - ALGEBRAIC SYSTEMS. (3) Prerequisite: MATH 317 with a grade of "C" or better. The theory of finite groups and related algebraic systems. Lagrange's Theorem, Sylow Theorems, and the structure of finite groups are studied. Applications of group theory to the study of algebraic problems and symmetry.

MATH 421. PROBLEM SOLVING FOR SECONDARY TEACHERS. (3) Prerequisites: MATH 307 or 310 with a grade of "C" or better or permission of instructor. Utilizes various techniques and technology to solve mathematical problems. Integrates concepts from algebra, geometry, trigonometry, probability, statistics, number theory, discrete mathematics, linear algebra, and calculus.

MATH 423. GEOMETRY II. (3) Prerequisite: MATH 323 with a grade of "C" or better or permission of instructor. An axiomatic development of hyperbolic geometry based on the hyperbolic parallel postulate and the absolute geometry developed in MATH 323, including an emphasis on contrasts with Euclidean geometry.

MATH 431. INTERMEDIATE ANALYSIS I. (3) Prerequisite: MATH 337 with a grade of "C" or better. Topics in analysis chosen from inverse and implicit function theorems, differentiation, integration, infinite series, series of functions, and elementary functional analysis.

MATH 439. TOPOLOGY I. (3) Prerequisite: MATH 317 with a grade of "C" or better, or permission of instructor. Introduction to topology including topics selected from: topological spaces, mappings, homeomorphisms, metric spaces, surfaces, knots, manifolds, separation properties, compactness and connectedness.

MATH 450. COMPLEX VARIABLES. (3) Prerequisite: MATH 237 with a grade of "C" or better. Complex number plane, analytic functions of a complex variable, integration, power series, calculus of residues, conformal representation, applications of analytic function theory.

MATH 470. INTRODUCTION TO OPERATIONS RESEARCH. (3) Prerequisites: MATH 237 and 307 with grades of C or better. Principles and techniques of operations research including linear programming, integer programming, quality theory, sensitivity analysis, and dynamic programming.

MATH 482 - PROBABILITY AND STATISTICS II. (3) Prerequisites: MATH 237 and MATH 382 with grades of C or better. Multivariate probability distributions; sampling distributions, statistical inference; point and interval estimation, properties of estimators; hypothesis testing; regression and correlation; analysis of variance; non-parametric methods.

- **Other Required Courses**

CS 170 (3 hrs) OR CS 180 (4 hrs) is required.

CS 170 - Problem Solving and Programming: The fundamentals of problem solving, program design, and program development techniques. A high-level programming language is used and lab experiences are included.

CS 180 - Computer Science I: A study of the algorithmic approach to the analysis of problems and their computational solutions, using a high-level structured language. Labs are included in the course.

1. **INITIAL PREPARATION EARLY FIELD AND CLINICAL EXPERIENCES:** The table below delineates the alignment between program courses and the EPSB required categories for early field and clinical experiences.

Course Name	Hours	School Level			EPSB REQUIRED EXPERIENCES CATEGORIES							
		ELEM	MIDDLE	HIGH	a. Engage with diverse students	b. Observe in Family Resource or Youth Services Center	c. Tutor	d. Interact with student families	e. Attend school board	e. Attend school-based council	f. Participate in professional learning community	g. Assist teacher/ other school professionals
SMED 101	30	X			X	X						X	X
SMED 102	30		X		X	X							X
SMED 310	20		X	X	X	X							X
SMED 320	40		X	X	X	X							X
SMED 340	20		X	X	X					X			X
SMED 360	20		X	X	X								X
SMED 470	40		X	X	X		X	X	X			X	X
Total Hours	**200**											

Note: Memorandums of Agreement with P-12 school partners are located under the CAEP Standard 2 link: http://www.wku.edu/cebs/caep/.

2. **KENTUCKY TEACHER PERFORMANCE STANDARDS ALIGNMENT**: The table delineates how the EPP-wide Initial Preparation Key Assessments, aligned to both Kentucky Teacher Performance and InTASC Standards, are embedded in the program.

KEY ASSESSMENTS					
AREA		**NAME**	**STANDARD ALIGNMENT**		**COLLECTED**
			KTS	**InTASC**	
1	Content Assessment	Praxis II	(1)*	(4,5)	Praxis Report
2	Other Content Assessment	Major GPA	(1)	(4)	Prior to Student Teaching
3	Assessment of Professional Capabilities	Praxis PLT	(2-10)	(1-3,6-10)	Praxis Report
4	Clinical Experiences Measure of Teaching Proficiency	Student Teacher Evaluation	1-10	1-10	MGE 490
5	Measure of Assessment Proficiencies	A: Learning Goals & Pre/Post Assessment B: Analysis of Student Learning	1-3,5-7	1-10	SMED 320
6	Ability to Diagnose and Prescribe for Personalized Student Learning	Design for Instruction	1,2,5,6	1,4-10	SMED 470
7	Application of Content Knowledge and Pedagogical Skills	Teacher Work Sample	1-3,5-7,9	1-10	SMED 489
8	Assessment of Literacy Outcomes	Operational Stance Concerning Content-Area and Discipline-Specific Literacies	1,2,5	1,4-7	SMED 340
9	Dispositions	Dispositions Form	NA	NA	SMED 102, SMED 320, SMED 470, MGE 490
10	KTS Exit Survey	KTS Exit Survey	1-10	1-10	SMED 489

*Assessments are theoretically aligned to standards; however, results cannot be disaggregated into distinct standards for reporting and analysis.

3. COURSE EXPERIENCES ADDRESSING LEARNED SOCIETY SPA STANDARDS: The table below delineates the alignment between program courses and the appropriate SPA standards.

SPA Standard # and Description **National Council of Teachers of Mathematics**	Course Alignment											
	SMED 101	SMED 102	SMED 310	SMED 320	SMED 340	SMED 360	SMED 470	SMED 489	MGE 490	SMED 300	SMED 400	
Standard 1: Content Knowledge Effective teachers of secondary mathematics demonstrate and apply knowledge of major mathematics concepts, algorithms, procedures, connections, and applications within and among mathematical content domains.	X	X	X	X	X	X	X	X	X	X	X	
Standard 2: Mathematical Practices Effective teachers of secondary mathematics solve problems, represent mathematical ideas, reason, prove, use mathematical models, attend to precision, identify elements of structure, generalize, engage in mathematical communication, and make connections as essential mathematical practices. They understand that these practices intersect with mathematical content and that understanding relies on the ability to demonstrate these practices within and among mathematical domains and in their teaching	X	X	X	X	X	X	X	X	X	X	X	
Standard 3: Content Pedagogy Effective teachers of secondary mathematics apply knowledge of curriculum standards for mathematics and their relationship to student learning within and across mathematical domains. They incorporate research-based mathematical experiences and include multiple instructional strategies and mathematics-specific technological tools in their teaching to develop all students' mathematical understanding and proficiency. They provide students with opportunities to do mathematics – talking about it and connecting it to both theoretical and real-world contexts. They plan, select, implement, interpret, and use formative and summative assessments for monitoring student learning, measuring student mathematical understanding, and informing practice	X	X	X	X	X	X	X	X	X	X	X	
Standard 4: Mathematical Learning Environment Effective teachers of secondary mathematics exhibit knowledge of adolescent learning, development, and behavior. They use this knowledge to plan and create sequential learning opportunities grounded in mathematics education research where students are actively engaged in the mathematics they are learning and building from prior knowledge and skills. They demonstrate a positive disposition toward mathematical practices and learning, include culturally relevant perspectives in teaching, and demonstrate equitable and ethical treatment of and high expectations for all students. They use instructional tools such as manipulatives, digital tools, and virtual resources to enhance learning while recognizing the possible limitations of such tools.	X	X	X	X	X	X	X	X	X	X	X	
Standard 5: Impact on Student Learning Effective teachers of secondary mathematics provide evidence demonstrating that as a result of their instruction, secondary students' conceptual understanding, procedural fluency, strategic competence, adaptive reasoning, and application of major mathematics concepts in varied contexts have increased. These teachers support the continual development of a productive disposition toward mathematics. They show that new student mathematical knowledge has been created as a consequence of their ability to engage students in mathematical experiences that are developmentally appropriate, require active engagement, and include mathematics-specific technology in building new knowledge.	X	X	X	X	X	X	X	X	X	X	X	
Standard 6: Professional Knowledge and Skills Effective teachers of secondary mathematics are lifelong learners and recognize that learning is often collaborative. They participate in professional development experiences specific to mathematics and mathematics education, draw upon mathematics education research to inform practice, continuously reflect on their practice, and utilize resources from professional mathematics organizations.	X	X	X	X	X	X	X	X	X	X	X	

Standard											
Standard 7: Secondary Mathematics Field Experiences and Clinical Practice Effective teachers of secondary mathematics engage in a planned sequence of field experiences and clinical practice under the supervision of experienced and highly qualified mathematics teachers. They develop a broad experiential base of knowledge, skills, effective approaches to mathematics teaching and learning, and professional behaviors across both middle and high school settings that involve a diverse range and varied groupings of students. Candidates experience a full-time student teaching/internship in secondary mathematics directed by university or college faculty with secondary mathematics teaching experience or equivalent knowledge base.	X	X	X	X	X	X	X	X	X	X	X

SPA Standard # and Description **National Council of Teachers of Mathematics**	Course Alignment											
	MATH 136	MATH 137	MATH 237	MATH 304	MATH 307	MATH 310	MATH 317	MATH 323	MATH 498	STAT 301		
Standard 1: Content Knowledge Effective teachers of secondary mathematics demonstrate and apply knowledge of major mathematics concepts, algorithms, procedures, connections, and applications within and among mathematical content domains.	X	X	X	X	X	X	X	X	X	X		
Standard 2: Mathematical Practices Effective teachers of secondary mathematics solve problems, represent mathematical ideas, reason, prove, use mathematical models, attend to precision, identify elements of structure, generalize, engage in mathematical communication, and make connections as essential mathematical practices. They understand that these practices intersect with mathematical content and that understanding relies on the ability to demonstrate these practices within and among mathematical domains and in their teaching	X	X	X	X	X	X	X	X	X	X		
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Standard 5: Impact on Student Learning Effective teachers of secondary mathematics provide evidence demonstrating that as a result of their instruction, secondary students' conceptual understanding, procedural fluency, strategic competence, adaptive reasoning, and application of major mathematics concepts in varied contexts have increased. These teachers support the continual development of a productive disposition toward mathematics. They show that new student mathematical knowledge has been created as a consequence of their ability to engage students in mathematical experiences that are developmentally appropriate, require active engagement, and include mathematics-specific technology in building new knowledge.												
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4. CURRICULUM CONTRACT:

CURRICULUM CONTRACT
Undergraduate Degree Program – B.A., Mathematics (Reference #728)
B.S., Science and Math Education (Reference #774)
Leading to Initial Teacher Certification (Rank III) in Secondary Mathematics Education, Grades 8-12

Admission Requirements:

To be admitted into this program, candidates must meet all minimal criteria described on the "Transition Points" page under "Transition Point 1: Admission to Education Preparation Programs."

Science/Math Education Component—34 hrs.		Specialty Studies – Mathematics Major	
SMED 101 – Step 1	3 hrs.	**REQUIRED CORE MATHEMATICS COURSES**	**33 Hrs.**
SMED 102 – Step 2	3 hrs.	MATH 136 – Calculus I	4
SMED 310 – Knowing & Learning	3 hrs.	MATH 137 – Calculus II	4
SMED 320 – Classroom Interactions	3 hrs.	MATH 304 – Function Applications & Explorations	3
SMED 340 – Perspectives	3 hrs.	MATH 307 - Linear Algebra	3
SMED 360 – Research Methods	3 hrs.	MATH 310 - Discrete Math	3
SMED 470 – Project-based Instruction	3 hrs.	MATH 317 - Intro Algebraic Systems	3
SMED 489 – Student Teaching Seminar	3 hrs.	MATH 323 – Geometry I	3
SEC 490 – Student Teaching	10 hrs.	MATH 237 – Multivariable Calculus	3
		MATH 498 – Senior Seminar	3
		STAT 301 – Probability/Applied Statistics	3
Colonnade Plan Component—39 hours			
See WKU catalog website for guidance in selecting appropriate coursework to meet WKU's Colonnade Plan requirements or go to: https://www.wku.edu/colonnade/colonnaderequirements.php		**RESTRICTED ELECTIVES**	**Total = 3 hrs.**
		MATH 405 – Numerical Analysis I	3
		MATH 406 - Numerical Analysis II	3
		MATH 409 – History of Mathematics	3
		MATH 415 - Algebra and Number Theory	3
		MATH 417 - Algebraic Systems	3
		MATH 421 - Problem Solving for Sec Teachers	3
		MATH 423 - Geometry II	3
		MATH 431 – Intermediate Analysis	3
		MATH 439 – Topology I	3
		MATH 450 - Complex Variables	3
		MATH 470 - Introduction to Operations Research	3
		MATH 482 - Probability & Statistics II	3
		Other Required Courses	
		CS 170 (3 hrs) OR CS 180 (4 hrs)	3/4
		Grand total hours (minimum required)	**120 hrs.**

Mid-Point Assessment Requirements:
To be admitted into the Student Teaching Semester, candidates must meet all minimal criteria described under "Transition Point 2: Admission to Final Clinical Experience."

Program Completion Requirements:
1. To complete a teacher preparation program, candidates must meet all minimal criteria described under "Transition Point 3: Program Exit."
2. Note that additional requirements (described below) must be met in order to be recommended for initial certification.
3. Rules and regulations governing the completion of this program of study have been described above and on the next page. By your signature, you are acknowledging that you understand and accept responsibility for meeting these requirements.

Delineation of EPP-Wide Transition Points – Initial Preparation Program

Transition Point 1: Admission to Education Preparation Programs				
Data Reviewed	*Minimal Criteria*	*Review Cycle*	*Reviewed By*	*Approved By*
Unit Level Data:	*Admission to Teacher Education*			

• Cumulative GPA
• CASE test scores
• Application to include:
  – 3 faculty recommendations
  – Physical (including TB test)
  – KY criminal background check
  – Signed KY Code of Ethics
	• 2.75+ average or above
	• Minimum CASE scores required as defined by current state guidelines (demonstrates Critical Thinking and Communication Skills)
	• 3 positive faculty recommendations (demonstrates their dispositions for teaching indicating their creativity and collaboration skills)
	• Passing physical
	• Passing background checks
		Each Month	Office of Teacher Services	Professional Education Council

Transition Point 2: Admission to Final Clinical Experience				
Data Reviewed	*Minimal Criteria*	*Review Cycle*	*Reviewed By*	
Unit Level Data	*Successful application to Student Teaching*			
• GPAs and at least 90+ hours completed (including 75% of content courses) • Completion of required field hours • Completion of Key Assessments • Dispositions scores	• 2.75+ GPA (overall, major, minor, and professional education courses); C or higher in all professional education courses • At least 200 hours documented based on requirements of 16 KAR 5:040 • 2+ holistic score; 2+ per KTS measured • All dispositions average "At Standard" (3+)	Each Semester	Office of Teacher Services	Professional Education Council
Transition Point 3: Program Exit				
Data Reviewed	*Minimal Criteria*	*Review Cycle*	*Reviewed By*	
Unit Level Data:	*Program Exit*			
• Candidate student teaching • Teacher Work Sample scores • Dispositions scores	• C or Higher • 2+ holistic score; 2+ per KTS measured • All scores "At Standard" (3+)	Each Semester	Office of Teacher Services	Certification Officer

To be recommended for initial certification, an applicant must document:
Completion of an approved educator preparation program in each desired certification area; Passing score(s) on the appropriate PRAXIS II and PLT exam(s) or other assessments required for each desired certification area; Achievement of at least a 2.75 GPA overall, in each major and minor, and in professional education courses; Attainment of at least a "C" in all professional education courses, including student teaching.

Remediation Opportunities:
TP 1: Candidates may continue to submit Faculty Recommendations until three are positive.
TP 2: Candidates may request additional instruction from faculty and may resubmit Key Assessments in order to improve their scores.
TP 3: Candidates may request additional instruction from faculty and may resubmit the Teacher Work Sample Key Assessment in order to improve their score. Candidates may repeat student teaching.

EPSB Disclaimer: Teacher certification requirements are subject to change. Before registering for the test(s), please refer to the Education Professional Standards Board (EPSB) website at www.epsb.ky.gov for current requirements or contact the Division of Professional Learning and Assessment at 502-564-4606 or toll free 888-598-7667.

By signing below, the candidate ensures that he or she has been advised of, understands, and agrees to adhere to all program requirements, including assessment requirements, of the program.

Candidate Name (printed):

Education Advisor's Signature/Date:

Signature   Date

Candidate Signature/Date:

Specialization Advisor's Signature/Date (if needed):

Signature   Date   Signature   Date

END OF CURRICULUM CONTRACT