### DSAC Course Offerings in Mathematics

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<td><strong>Massachusetts Intel Mathematics Initiative (MIMI)</strong></td>
<td><strong>Increasing Accessibility to Algebra &amp; Geometry for ALL Learners</strong></td>
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<td>This 80-hour course is for K – 8 teachers, teacher leaders, and coaches of mathematics. The course focuses on a conceptual understanding of arithmetical operations (and fractions) for the first half of the course and foundational algebra (linear functions) for the second half, with the relationship of arithmetic, geometry, and algebra highlighted throughout the course. All topics are taught using a variety of problem solving strategies and technology resources that relate directly to the K – 8 mathematics classroom with 10% of the course devoted to pedagogical connections.</td>
<td>This course offers foundational math content and pedagogical strategies for general education, inclusion and special education teachers of grades 5 through 10. It strengthens teachers’ understanding of concepts and relationships among concepts within various domains including Operations and Algebraic Thinking; Equations and Expressions; Functions; and Geometry. Teachers will learn universal design strategies and techniques to increase accessibility of rigorous mathematics to a broad range of learners.</td>
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<td><strong>Mathematics Learning Community (MLC)</strong></td>
<td><strong>Advanced Mathematical Decision Making</strong></td>
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<td>This facilitator training provides coaches and teacher leaders with training to create and sustain job-embedded professional development. The MLCs serve as an important bridge between knowledge of mathematics and understanding how students learn mathematics in the classroom. MLCs were originally created to serve as a powerful complement to the MIMI course, but they may also stand on their own. This training prepares teacher leaders and coaches to lead MLCs by allowing them to engage in sessions as participants and to practice facilitating sections with their peers. Fundamental number sense and algebraic concepts are addressed by directly engaging with the mathematics and then looking at related student work. Detailed discussions about student thinking help support the needs of students with disabilities and students who are English language learners.</td>
<td>This course prepares teachers to implement AMDM during the school year. AMDM is a mathematics course designed to follow Algebra I, Geometry, and Algebra II. It involves the use of algebra, geometry, trigonometry, and discrete mathematics to model a range of situations and solve problems in diverse areas such as statistics and financial mathematics. The institute facilitators, including experienced AMDM teachers, help participants to develop the unique combination of mathematical content as well as pedagogical skills called for in implementing AMDM.</td>
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For more information, contact Wendy Cleaves, Math Coordinator at wendy.cleaves@umassmed.edu
Massachusetts Intel Mathematics Initiative (MIMI)

**Description:** This 80-hour course is for K – 8 teachers, teacher leaders, and coaches of mathematics. The course focuses on a conceptual understanding of arithmetical operations (and fractions) for the first half of the course and foundational algebra (linear functions) for the second half, with the relationship of arithmetic, geometry, and algebra highlighted throughout the course. All topics are taught using a variety of problem solving strategies and technology resources that relate directly to the K – 8 mathematics classroom with 10% of the course devoted to pedagogical connections. The course was derived from a professional development program that successfully linked course completion with improved student mathematics achievement.

**Administrator Support Module:** Principals and coach/teacher leader attend a half-day overview prior to the MIMI course to understand what they should see in their teachers’ practice as a result of their participation in the course and how to provide embedded support.

**Site Facilitator/Coach Component:** N/A

**Course Format:** 80-hour course (Number of days and fall follow-up sessions vary by region.)

**Targeted Grade Level:** K-8

**Prerequisites:** None

**Resources Teachers Will Receive:** Intel Math Teacher Manual, Intel Math Reference Manual (Readings and Answers)

**Products Teachers Will Generate:** Portfolio of work

**Graduate Credit and PDPs:** 6 graduate credits available through Framingham State University for $75/credit (cost in 2013); 120 PDP’s for course completion.

**Cost:** Districts should budget $1960 for each participant plus the cost of travel and stipends (if applicable). If a district wants to purchase the course for in-district use, the cost is $49,000.

**Vendor:** Regional Science Resource Center at UMass Medical School

**Participant Quotes:**

- “Course design with two instructors (one content, one pedagogy) is very effective. I appreciated the modeling that the instructors did as they worked with everyone in whole group, small groups and individually.”
- “The instructors’ questioning, probing and encouragement of the class set a positive learning environment.”

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Mathematics Learning Community (MLC)

**Description:** This facilitator training provides coaches and teacher leaders with training to create and sustain job-embedded professional development. The MLCs serve as an important bridge between knowledge of mathematics and understanding how students learn mathematics in the classroom. MLCs were originally created to serve as a powerful complement to the MIMI course, but they may also stand on their own. While the MLC materials are available free of charge on the ESE website, the course trains coaches and teacher leaders to lead MLCs by allowing them to engage in sessions as participants and to practice facilitating sections with their peers. Fundamental number sense and algebraic concepts are addressed by directly engaging with the mathematics and then looking at related student work. Detailed discussions about student thinking help support the needs of students with disabilities and students who are English language learners.

**Administrator Support Module:** Principals and other administrators will participate in a half day session to learn the intent of and research supporting a site-based Mathematics Learning Community, ways that they can support a successful implementation, and new staff behaviors to look for.

**Site Facilitator/Coach Component:** This training is designed for the participants to return to their schools/district and support their teachers in using the MLC materials to develop a Math Learning Community. They will practice facilitation, learn how to address common dilemmas, and support teachers in analyzing student work.

**Training Format:** 5 full days, 30 hours total

**Targeted Grade Level:** K – 8

**Prerequisites:** None

**Resources Teachers Will Receive:** MLC Facilitators Guide Binder (supports 10 two-hour sessions) and electronic feedback as school/district-based MLC is implemented

**Products Teachers Will Generate:** Participants will learn and practice the skills to effectively implement and facilitate a school/district-based MLC

**Graduate Credit and PDPs:** 30 PDPs, no graduate credit.

**Cost:** Districts should budget $1300 for each participant plus the cost of travel and stipends (if applicable). If one district wants to purchase the course, the cost is $22,000

**Vendor:** Regional Science Resource Center at UMass Medical School

**Participant Quotes:**

- “Sharing and talking with others and hearing a variety of ideas deepened my understanding of my role [as a MLC facilitator]. Engaging tasks made the time go quickly. Thanks for making such detailed facilitator notes. It will make it easier to implement.”

- “Practice facilitation and modeling enabled me to see how I facilitate. Being the learner enabled me to see the role of my MLC members.”

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## Increasing Accessibility to Algebra & Geometry for ALL Learners

**Description:** This course offers foundational math content and pedagogical strategies for general education, inclusion and special education teachers of grades 5 through 10. It strengthens teachers’ understanding of concepts and relationships among concepts within various domains including Operations and Algebraic Thinking; Equations and Expressions; Functions; and Geometry. Teachers will learn universal design strategies and techniques to increase accessibility of rigorous mathematics to a broad range of learners.

**Administrator Support Module:** Principals and coach/teacher leader attend half-day orientation during course (on Day 5) to understand what they should see in their teachers’ practice as a result of their participation in the course. Teachers will receive embedded support, and the leaders will routinely look for evidence of learning from the course being implemented in classroom practice.

**Site Facilitator / Coach Component:** N/A

**Course Format:** 7 full day sessions; 1 half day in the fall: 45 hours total

**Targeted Grade Level:** Grades 5 – 10

**Prerequisites:** None

**Resources Teachers Will Receive:** Math resource book, instructional materials and online access to hundreds of teacher-created strategies and graphic organizers

**Products Teachers Will Generate:** A 5-10 day unit incorporating at least 4 Institute strategies

**Graduate Credit and PDPs:** 67.5 PDPs for course completion; 3 graduate credits available through Fitchburg State University for $275 (cost in 2013)

**Cost:** Districts should budget $1200 for each participant plus the cost of travel and stipends (if applicable). However, if the district wants to buy the entire course for their district, the cost is $32,000.

**Vendor:** Regional Science Resource Center at UMass Medical School

**Participant Quotes:**

- “I felt the pace was excellent; the class provided for application of strategies and skill being reviewed in the class. The course was taught using tiers and addressing learning styles, and the teachers modeled what they were teaching and promoting for the classroom.”

- “I will use every strategy that I learned in this course. I have never taken a course or in-service that has provided me so much valuable information. All four instructors were well prepared for each class and there was no wasted time or activity. I am excited to return to my classroom and use the strategies that I have learned.”

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High School
Advanced Mathematical Decision Making (AMDM)

Description: This course prepares teachers to implement AMDM during the school year. AMDM is a mathematics course designed to follow Algebra I, Geometry, and Algebra II. It involves the use of algebra, geometry, trigonometry, and discrete mathematics to model a range of situations and solve problems in diverse areas such as statistics and financial mathematics. The institute facilitators, including experienced AMDM teachers, help participants to develop the unique combination of mathematical content as well as pedagogical skills called for in implementing AMDM.

Administrator Support Module: Principals and coach/teacher leader attend a half-day overview prior to the AMDM course to understand what they should see in their teachers’ practice as a result of their participation in the course and how to provide embedded support.

Site facilitator/Coach Component: Site Facilitators/coaches will work with the instructors directly in debriefs of the day to gain additional understanding of the intent of the activities, possible clarification and/or elaboration of a concept, and possible challenges to the teachers in the classroom.

Course Format: 5 days in summer, two follow up days during the academic year and participation in a facilitated online community.

Targeted Grade Level: This course is for high school teachers who will be teaching a 4th year of math course.

Prerequisite: High School math teacher

Cohort Information: High school math teacher who will be teaching this 4th year math course

Resources Teachers Will Receive: AMDM Teacher Manual, one copy of the student book, and access to a wide range of web resources

Products Teachers Will Generate: Portfolio of work

Graduate Credit and PDPs: 3 graduate credits available through Worcester State University for $100/credit (cost in 2013); 67.5 PDP’s for course completion.

Cost: Districts should budget $1200 for each participant plus the cost of travel and stipends (if applicable).

Vendor: Regional Science Resource Center at UMass Medical School

Participant Quotes:
- “Hands-on experience with the AMDM lessons and the opportunity to collaborate with other teachers combined for a very meaningful and productive course.”
- “I liked the different strategies that were given to keep students engaged. The work we did modeled our classroom students’ work. It touched on many different topics in the context of mathematical decision-making.”

For more information, contact Wendy Cleaves, Math Coordinator at wendy.cleaves@umassmed.edu