

The Mathematics Pathways to Completion (MPC) is a major effort by the Dana Center Mathematics Pathways (DCMP) to support states that are implementing the **DCMP's principles** at scale. The goal is to improve the success of students in developmental and gateway mathematics courses.

Since 2015, the Dana Center has supported six states—Arkansas, Massachusetts, Michigan, Missouri, Oklahoma, and Washington—through a robust, three-phase scaling process. In phase one, each state creates its own task force, consisting of a member from a lead policy agency and mathematics faculty from two- and four-year institutions, to define a set of statewide recommendations to improve success in undergraduate mathematics. The work in phase two creates enabling conditions for statewide implementation of mathematics pathways. In phase three, institutions are implementing on their campuses.

The Dana Center's deep commitment to mobilize and empower faculty leaders is key to our planning and implementation process. Faculty are the champions that will ensure true change occurs at the institutional level, while state-level agencies are creating the environment that supports the work. This past year, the MPC states have done exceptional work as they move into phases two and three of mathematics pathways implementation.

To see highlights of some of the exceptional work this past year at MPC states, please see this document.

To learn more about the MPC project, visit <https://dcmathpathways.org/where-we-work/mathematics-pathways-completion-mpc>

## Arkansas

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In May 2017, teams from 31 of the state's 33 two- and four-year institutions gathered at a Designing Mathematics Pathways Workshop to develop plans for implementation on their campuses for the Fall 2018 semester. Since then, leaders from 31 institutions have submitted their letters of commitment to implement mathematics pathways that are aligned with the state task force's **recommendations**.

The Arkansas Mathematics Pathways Task Force (AMPT) created steering committees to support institutions in addressing four particular issues: multiple measures, professional development, Arkansas Course Transfer System (ACTS) language changes, and common math requirements. The professional development steering committee is organizing several events to support institutions to adopt multiple mathematics pathways; some workshops include focus on co-requisite remediation strategies.

Additionally, during the Spring 2017 semester, the common math requirements steering committee developed a survey to identify the mathematical skills and topics most relevant to students majoring in specific areas to ensure that students were learning the necessary mathematics. This survey was administered statewide to faculty of other disciplines. **The results** show that Quantitative Reasoning and Introduction to Statistics are more relevant to the programs of study.

Using the survey results as well as other relevant information, the Arkansas Department of Higher Education will distribute recommendations that emerge from its ACTS Course Review process related to which mathematics courses should be required for the most popular transfer programs across the state.

## Massachusetts

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As Massachusetts begins phase two of the MPC project, the Designing Mathematics Pathways Working Group is focusing on aligning student success initiatives. Elena Quiroz-Livanis, chief of staff and director of Academic Policy and Student Success at the Massachusetts Department of Higher Education (MDHE),

highlights that they “are in the midst of a campus-based multiple measures pilot, a statewide approach to co-requisite work at scale, and designing mathematics pathways. Getting our institutions to see these projects as interrelated and comprehensive approach is our mission.”

The working group created several subcommittees to address how to align the state’s multiple student success initiatives. Each subcommittee focuses on a specific area: co-requisite education; building an elementary education pathway, a college algebra/pre-calculus pathway, and quantitative reasoning pathway; and ensuring alignment between K–12 and postsecondary education.

Visit the MDHE page on [Transforming Developmental Math Education](#) for more information on Massachusetts’s student success initiatives.

## Michigan

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Michigan has three strategies to strengthen mathematics pathways across the state’s institutions. The first strategy is to align gateway course(s) in each pathway and ensure transferability through the Michigan Transfer Agreement. Mathematics faculty from 13 community colleges and eight universities recommended learning outcomes for initial college-level courses in quantitative reasoning, statistics, and preparation for calculus. In 2018, all 43 public colleges and universities will be invited to develop plans to adopt the learning outcomes, accept courses using the learning outcomes in transfer, and ensure that those courses apply to students’ programs of study by Spring 2020.

The second strategy is to improve outcomes for students placed in developmental mathematics. In November 2017, 15 institutions attended a Co-Requisite Workshop and developed plans to create opportunities for more students to complete gateway mathematics courses during their first year of college. Michigan is inviting institutions to pilot this work in Fall 2018.

The third strategy is to recommend appropriate mathematics pathways for transfer programs. Over the next three years, Michigan will build transfer pathways for its top bachelor’s degree programs. This work will begin in 2018 when community college and university faculty from biology, business, criminal justice, and psychology will meet with mathematics faculty to select the most relevant mathematics pathway for each program.

To learn more about Michigan’s efforts to scale mathematics pathways, visit <https://dcmathpathways.org/where-we-work/michigan>.

## Missouri

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Five regional symposiums in Fall 2017 generated awareness around mathematics pathways and brought together teams from the two-year, four-year, and K–12 sectors in the state. Assistant Commissioner for Academic Affairs at the Missouri Department of Higher Education Rusty Monhollon shares that Missouri “made a conscious effort to include K–12, especially school counselors. Our thinking is, if counselors know about and suggest options for college that perhaps more students will consider the alternatives to college algebra and think purposefully about the math education they receive.”

For more on the Missouri symposiums, visit [this page](#). The student learning outcomes for each Missouri entry-level mathematics courses most effective and beneficial to each academic major may be found [here](#).

## Oklahoma

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Following the Designing Mathematics Pathways workshop in April 2017, all two- and four-year institutions committed to the mathematics pathways initiative with the expectation that each institution will offer College Algebra and an entry-level math course for at least one alternate mathematics pathway by Fall 2018.

Each institution submitted an action plan and will receive strategic support and resources to further their efforts.

In Fall 2017, Oklahoma created four student learning outcomes (SLO) working groups to develop and vet learning outcomes for its entry-level mathematics courses: College Algebra, Mathematical Modeling, Statistics, and Quantitative Reasoning. The Oklahoma State Regents of Higher Education plans to finalize each pathway's learning outcomes for the statewide transfer matrix in February 2018.

To learn more about Oklahoma's efforts to scale mathematics pathways, visit <https://dcmathpathways.org/where-we-work/oklahoma>.

## Washington

In October 2017, Washington hosted Designing Mathematics Pathways workshops in Spokane and Seattle. These workshops supported institutional teams that were either beginning or deepening their work to develop and implement mathematics pathways at scale. Twenty-three two- and four-year higher education institutions attended with teams of at least three people, including math faculty and an administrator. Each team identified key action steps to launch new efforts or to further current work. The Dana Center will conduct follow-up calls to each team in Spring 2018 to assess progress and provide technical assistance for ongoing work.

Also, in Fall 2017, 10 colleges and universities joined the Washington mathematics pathways initiative, committing to participate in project activities and to complete reporting and data collection requirements for implementation by Fall 2018. Each institution submitted an action plan so that strategic support and resources can be provided to further their efforts.

To learn more about Washington's efforts to scale mathematics pathways, visit <https://dcmathpathways.org/where-we-work/washington>.

## Institutional Commitments to Math Pathways Across MPC States

In phase two of the Mathematics Pathways to Completion project, states were charged with securing commitments from institutions seeking to implement mathematics pathways by Fall 2018. We are pleased to announce that 88 higher education institutions across the MPC states have made this commitment. Each state's secured institutional commitments across two- and four-year institutions are noted below.

| MPC State    | Secured Institutional Commitments from... |                        |
|--------------|---|------------------------|
|              | Two-year Institutions                     | Four-year Institutions |
| Arkansas     | 20  | 11                     |
| Missouri     | 11  | 9                      |
| Oklahoma     | 14  | 13                     |
| Washington   | 8   | 2                      |
| <b>Total</b> | <b>53</b>                                 | <b>35</b>              |

This monumental milestone highlights the transition of mathematics pathways work from state-level to institution-level implementation. In this transition, each state will receive ongoing technical assistance to support and guide implementation of mathematics pathways. Simultaneously, local leaders through the state's math task force will monitor institutional progress to identify ongoing support and opportunities to sustain the work across each state.

To learn which institutions committed to implementing mathematics pathways, visit the state-specific page found on the DCMP resource site, under Where We Work.