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## Corequisite Mathematics Toolkit

# Definitions and Frequently Asked Questions

Responses to some of the most common questions from the field, as well as definitions and related examples.

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Every student deserves a strong start in their first year of college. This toolkit is part of a SSTF three-part series, providing resources to assist postsecondary leaders design and implement reform strategies that support equitable outcomes for students who are marginalized and racially minoritized.



The University of Texas at Austin  
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# Definitions

## Corequisite supports/models

*Corequisite*, as in corequisite supports or models, typically refers to the practice of placing students who have been designated as underprepared directly into college-level courses and providing necessary additional supports to effectively engage with the college-level coursework. Corequisite courses are most commonly used with gateway English and mathematics courses, but are also used in other disciplines and to accelerate sequences (e.g., precalculus, the calculus sequence).

## Calendar structures

See the [“Corequisite Models” webinar](#).

## Just-in-time supports; one semester

- **Support courses:** Separate structured class sessions specifically designed to provide instruction on the developmental content needed for success in the associated college-level courses; offered in parallel with the college-level course and completed within one semester.
- **Embedded supports:** Educational intervention in which the needed developmental content is embedded into the college-level class with additional contact hours.
- **Mandatory tutoring:** Required attendance in a tutoring lab for a specified number of hours per week.

## Prerequisite supports + college-level; one semester

- **Boot camps:** During the first three to five weeks of the semester, the instructor provides prerequisite material. The rest of the semester, the instructor delivers the college-level content (classes meet for extra hours each week throughout the semester).
  - Caution: Research indicates that boot camp effects are short-term and generally have “trivial negative to moderate positive” effects.<sup>8</sup>

## Just-in-time supports; two semesters

- **Stretch courses:** College-level classes with the developmental content embedded and stretched over two semesters.
  - Caution: Research shows that transition points lead to attrition.<sup>9</sup> If this model is utilized, consider strategies to ensure students enroll in the second semester prior to completing the first semester.

8. Hodara, 2013.

9. Jaggars & Stacey, 2014.

### Multiple Measures Assessment/Placement

Multiple Measures Assessment is a general term that refers to moving away from a reliance on standardized test scores to assess student readiness for college-level coursework, and moving toward the use of additional data to determine the level of support that a student needs in order to be successful in college courses. Common measures include high school grade point average, highest math course taken in high school, the course grade in the highest math course and measures of non-cognitive factors. The two examples given below show the use of multiple measures to fully scale corequisites. All students are placed into transfer-level courses; the assessment measures are used to determine whether they also receive additional supports.

#### Cuyamaca College, California

Uses HSGPA and course-taking only; no testing. HSGPA is self-reported.

Path	Measures	Placement
<b>Algebraic</b>	Grade of C in High School Algebra II and $GPA \geq 3.3$	Transfer-level
	A or B in Algebra II and $GPA \geq 3.0$	Transfer-level
	A or B in PreCalculus and $GPA \geq 3.0$	Calculus I
	C in PreCalculus and $GPA \geq 3.0$	Calculus I
	All others (including NO Algebra II)	Transfer-level with support
<b>Stats &amp; QR</b>	$GPA \geq 2.8$	Transfer-level
	$GPA < 2.8$	Transfer-level with support

**Southern Arkansas University**

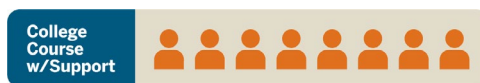
Example: Mathematical Literacy path. High School GPA within five years

		Unweighted GPA		
		<2.51	2.51–2.99	3.00+
Math ACT or Equivalent	22+	MATH 1053 Mathematical Literacy & MATH 0051 Math Literacy Lab	MATH 1053 Mathematical Literacy	
	18–21	MATH 1053 Mathematical Literacy & MATH 0051 Math Literacy Lab		MATH 1053 Mathematical Literacy
	<18	MATH 1053 Mathematical Literacy & MATH 0051 Math Literacy Lab		

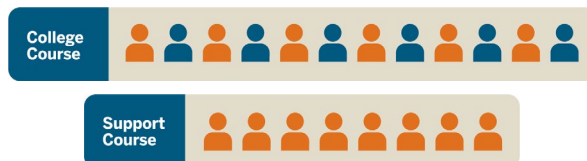
**Student structures** – see the “Corequisite Models” webinar



**Cohorting:** Designating certain sections of college-level courses exclusively for students who have been underserved in the past and therefore designated as underprepared. The support content may be embedded in the college-level class with extended hours or in a separate support course.



**Co-mingling:** Enrolling college-ready and students assessed as non-college-ready in the same college-level class. Students designated as underprepared are provided additional instruction in a separate support course.



**Throughput rate**

The proportion of a cohort of students who persist through the entire developmental sequence to enroll and succeed in a gateway course within a given time frame. For example, what proportion of students who enrolled in fall 2016, and were assessed at the third level of developmental mathematics, completed their gateway math course within two academic years?

# Frequently Asked Questions

## What is a corequisite course?

A corequisite course is designed to provide additional supports for students who have been underserved in the past, with a goal of enrolling in and completing their gateway mathematics requirement in one term. Rather than placing students in prerequisite developmental courses, institutions enroll these students directly into gateway courses and provide necessary supports in a just-in-time fashion. Multiple measures should be employed to determine the level of support students need. Depending on need, the supports may be two, three or more additional hours per week. Many corequisite courses also include instruction in academic mindsets and learner strategies.

## What are considered “fully scaled” corequisite supports?

The definition of fully scaled corequisite supports may vary slightly by region or state. In general, it is when an institution has eliminated all Beginning Algebra, Intermediate Algebra, Pre-Statistics, etc. developmental courses and enrolls all students who previously would have been placed in those courses directly into gateway courses with additional supports.

## What is the best model for corequisite supports?

There is no research that endorses one best model, as it depends on your institutional context. In fact, many institutions utilize more than one model depending upon various constraints, including financial, staffing, room capacities and availability, or initial course structures. For example, you may choose the cohort model with one instructor for your algebraic pathway but use the co-mingled model for other pathways. See the [“Corequisite Models” webinar](#).

## What is the best way to assign grades in the corequisite courses? What if the student passes the support course but fails the gateway course? What if the student drops or stops attending the support course?

Similar to there being no best model for everyone, the answers to these questions vary based on institutional context. If students fail the gateway and pass the support course, some institutions require those students to retake both courses, while other institutions simply require students to retake the gateway course. Below are some responses from institutions that have addressed these issues:

- “We keep the two grades completely separate.”
- “Students won’t take the support course seriously if you don’t tie the grade to the gateway course in some way.”
- “The support course is required. If students don’t attend, they are dropped from both courses.”
- “If students can pass the gateway course without passing (or even attending) the support course, then we don’t penalize them. The point is to pass the gateway.”
- “The grades are separate and the support portion of the course is graded on a Pass/Fail system, whereas the college-level course is traditionally graded.”

The development team should consult with the college's Financial Aid Director, as some directors have a very rigorous understanding of what constitutes a separate course. Such a rigorous interpretation may require the college to base the support course grade on assignments that are made only in the support course not tied to the assignments in the gateway course. In order to ensure effective implementation, it is important to involve all student support departments (financial aid, advising, registration, etc.) in design discussions. These partners are often able to identify structural issues that need to be overcome while designing and implementing corequisite supports.

#### **What if a student transfers into or out of our institution? How will corequisites impact them?**

If the student has received college-level credit for a course that already has approved transferability or approved learning outcomes from the receiving institution, there should be no impact on transfer. The grading options mentioned above can impact transfer. In general, if the student receives credit for the support course, they are considered to have completed their developmental requirement. Include your usual transfer partners in these discussions.

#### **How do you maintain rigor and integrity of the college-level course?**

The members of the mathematics department must work together to ensure transparency and maintain rigor in their courses. One effective strategy is to have common course materials and some common assessments, including the final exam, for all sections of the gateway courses.

#### **Is there a bottom threshold below which the corequisite model is less effective?**

Students at the upper end of the placement scale generally perform better than students at the lower end of the scale. However, even students at the lower end are more likely to earn college-level credit via a corequisite course than they would be if they had to persist through multiple levels of prerequisite courses first. There is no existing research that identifies in advance which students are unlikely to be successful in the corequisite.

#### **Should there be a reading requirement? What about Emergent English Learners?**

For students assigned to developmental education in both math and English, some institutions focus on English in the first semester and math in the second semester. If students are in corequisite supports for both courses in the same semester, the combined hours can fill an entire schedule. Concentrating on one subject at a time allows the student to also take some courses in their major, which is important for their sense of purpose.

#### **What if students designated as college-ready want to come to the support course?**

Many institutions allow students designated as college-ready to occasionally attend or enroll in the support course if they choose; depending on variables such as room capacity and instructor preference. Some institutions place all students into the support course as the default and allow students to challenge their placement if they want to opt out of the support course. This is another area in which to consult the financial aid director.

#### **Can corequisite courses be delivered as online classes?**

Some institutions do not allow students in corequisites to take online classes. However, consider carefully whether or not offering an online option is worth the potential loss of some students. Many other institutions do offer corequisite courses online, but that option calls for careful structuring of support, including technology and non-content related skills particular to the online setting, and on-going communication between instructors and students.

### **When institutions transition to the corequisite model, will faculty lose their jobs if they are not credentialed to teach the college-level course?**

Most institutions who have transitioned to fully implement the corequisite model have maintained most faculty positions. The success of the transition depends on the model chosen, credentialing requirements and the faculty pool in the region.

- Under a corequisite model, many entering students will be enrolled in five to six hours of mathematics, requiring additional sections of the gateway courses—and therefore more faculty to teach them.
- In a cohort model, faculty who are credentialed to teach gateway level will teach both the gateway and the support content. Faculty who are not credentialed to teach gateway level will need to get credentialed.
- In a co-mingled model, faculty who are not credentialed to teach gateway courses can teach the support course.

### **Can corequisites be offered if we have separate departments for developmental and college-level math?**

Yes, many institutions have successfully implemented corequisites with separate departments. The two departments must collaborate on structures and communication strategies to ensure alignment of content so that students are receiving the necessary supports at the appropriate time.

### **What are psychosocial factors?**

Evidence shows that many students are not familiar with all of the skills necessary for success in college. Faculty teaching developmental courses often include instruction in psychosocial factors, such as growth mindsets, persistence, time management, stress management, study strategies, etc. When implementing a corequisite model, instruction in these areas will need to take place in the gateway and/or support course.

### **What about classes on campus that have our developmental classes as a prerequisite?**

Include those departments in the planning discussions. Often, the requirements were put into place because the content required that the student be designated college-ready or enrolled in a college-level math class (e.g., introductory chemistry requiring students to have some algebraic understanding). With corequisites, students are in a college-level math course and usually do just as well in the math class as students designated as college-ready.

### **What are the necessary and sufficient conditions for corequisite implementation?**

- Institutions offer robust mathematics pathways that direct students toward the math course best aligned with their programs of study, and provide additional supports for those students who need it.
- There is institutional capacity to collect and analyze data to make data-driven decisions for initial implementation and for ongoing scaling and continuous improvement.
- Institutions have sufficient faculty with appropriate credentials to meet the demand in the first few years of implementation.
- Careful attention must be paid to aligning content, especially if the gateway and support courses have different instructors. We recommend a department-wide common course calendar. Some portion of each support course may be used to answer homework questions, but the majority of each class meeting should be dedicated to preparing the students to engage successfully in the next gateway class meeting.
- The advising community must be included in the conversations in order to ensure their understanding of the difference between corequisite courses and traditional prerequisite developmental courses.

# About This Toolkit

The development of this toolkit was guided by the advice of a national advisory panel made up of experts who have worked deeply with corequisites across a variety of roles and contexts. The panel includes researchers, policymakers, faculty members, equity advocates and curriculum experts who collectively articulated a consensus statement on the foundational core of this toolkit, the “Corequisite Design Principles” document and vetted the associated resources.

## About The Authors

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Connie leads the curriculum development team for the Dana Center Mathematics Pathways, a transformative redesign to modernize entry-level college mathematics programs through working with states, systems, universities and colleges. She also supports the development of DCMP’s professional learning offerings related to curricular redesign, corequisite supports and pedagogy. In this work, Connie collaborates with faculty to identify best practices and disseminate to the field.

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### **About The Charles A. Dana Center**

The Dana Center works to dismantle barriers in education systems to ensure all students—especially those who have historically been underserved—have equitable access to and success in an excellent math and science education. Our higher education work focuses on strategies and tools that support faculty and institutions in creating more seamless transitions from high school to and through gateway mathematics courses.

### **About Strong Start to Finish**

Strong Start to Finish is a network of policy and research partners, institution and systems leaders, and foundations advancing system reforms in developmental education, so every student can succeed in their first year of college. In particular, we support college success for Black, Brown, Asian American, Indigenous students, adult learners, and students with low incomes, who have been underserved by the education system for too long. We work to scale the use of proven, proactive strategies that remove barriers that typically impede these students from earning essential college credits in English and Math courses in their first year. Education Commission of the States is the host of the Strong Start to Finish network.



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