Roadmap to Corequisite Redesign

Key points to consider when implementing a corequisite solution
Introduction

According to the U.S. Department of Education, in the 2011–2012 academic year, about one-third of first-year undergraduates in the United States took at least one developmental course, and 59% were enrolled in a developmental math course at a public, two-year college. Institutions have been searching for the best and most efficient way to help more students persist and complete required math courses — and then eventually earn their college degrees.

The graphic to the right, adapted from a research overview written by the Community College Research Center out of Columbia University, depicts the problem students face when they have to complete three or more levels of developmental math. A large percentage either do not enroll in the next course in the sequence, or they do not pass or complete the course they’re in. In the end, this study showed that of all the students who were referred to more than three levels of remediation in math, only 11% of them eventually passed the gateway level math course that they took, leaving 89% without the chance to graduate college.

While a variety of course options exist to address the needs of students requiring additional support, finding a means that doesn’t derail their collegiate efforts is integral to the retention and success of these students. One strategy state legislatures and institutions are adopting is the corequisite model to help students get to — and through — credit courses faster and more successfully. A course can be classified as a corequisite when it is required to be taken simultaneously with another course within the same semester.

In this Roadmap to Corequisite Redesign, part one details different corequisite course models and spotlights schools who are currently implementing corequisite courses. Part two provides some points to consider when setting up a MyLab™ Math or MyLab™ Statistics course, as well as information regarding product features that may be particularly helpful in a corequisite setting.
PART ONE: Logistics of Corequisite Course Structure

In order to successfully plan a corequisite course, four key areas must be addressed prior to creating the course:

1) Instructor Considerations: Same or Different
2) Course Delivery: Stacked or Spaced
3) Content Timing: Concurrently or Consecutively
4) Student Body: Cohort or Co-mingle

Within these key areas, cohesion is important, especially if more than one faculty member will be administering the course. Picking one path and sticking to it within each area ensures consistency and makes for a more streamlined implementation.

“The power of the corequisite model is that we’re talking about would-be developmental students completing college-level math in a single semester.”

—Sue Ann Jones-Dobbyn, Professor, Pellissippi State Community College
Who will teach the corequisite course?

Before you begin asking questions about how your course will be organized, it’s important to think about who will be teaching the corequisite course. If department size isn’t an issue as far as staffing goes and you have enough faculty who are able to teach credit-level courses, you might want to consider having a single instructor teach both the support and the for-credit pieces of your corequisite course. This provides cohesion in how both areas of the course are taught and can be helpful to students.

For smaller departments, having enough staff with the proper qualifications to teach both parts of a corequisite course may prove difficult. In the case of using multiple instructors to teach the course, communication is key in developing a cohesive program that helps developmental students move easily between both pieces of the course.

A CLOSER LOOK: Same instructors

Pellissippi State Community College decided to prioritize using the same instructors in the Introductory Statistics corequisite course to create a cohesive structure that directly informed the underlying college-level course. The corequisite was put into place partly to address the issue of students dropping out because they didn’t feel a part of the college while receiving support.

According to a Fall 2016 end-of-semester student survey, 81% of student respondents agreed that having the same instructor in the support course and the credit course played an important role in their course performance.

“Many schools don’t have the luxury or the ability to have the same instructor, but we felt it was very important.”

—Brittany Mosby, Professor, Pellissippi State Community College

A CLOSER LOOK: Different instructors

Students at Stanly Community College with a high school GPA range of 2.6–2.99 are required to take a two-week MyLab Math boot camp* with a “Let’s Go Racing” theme in order to prepare for Precalculus Algebra. The module consists of three parts:

- **Start Your Engines** is a 25-question pre-test designed to detect prerequisite skill areas in which students need additional training.
- **Pit Stops** are instructional modules that address gaps in knowledge.
- **Winner’s Circle** is a post-test which gauges and records changes in knowledge and skill levels.

Since different instructors teach each portion, the department chair utilized the coordinator course and course copy features in Pearson’s MyLab Math to create one homogeneous course with identical assignments across all sections.

“The module was fairly easy to build and implement since both our developmental and curriculum math courses were already using MyLab Math.”

—Brigette Myers, Department Head of Mathematics, Stanly Community College

*The structure of Stanly’s two-week boot camp isn’t a true corequisite because every student, regardless of need, must take it. However, this model is worth considering as a possible alternative.
How will the corequisite course be delivered?

Regardless of whether the developmental portion of the program is a section within a college-level course or a complete course on its own, the department will need to consider how to deliver the sections.

**Stacked learning** is when the course delivery is designed so that the support course is taught immediately before or after the credit-level course meets. For example, students would go to the support portion at 9:00 a.m. on MWF and the credit-level portion at 10:00 a.m. on MWF.

**Spaced learning** spreads out the timing of the sections into separate instructional days. For example, a course in this format might teach the credit-level section on MWF and a support section on T/Th.

It’s also important to decide how much time will be dedicated to the support course. Depending on the level of student and the course, time dedicated to support typically ranges from 1–3 hours.

A CLOSER LOOK: Stacked learning

**Tulsa Community College** currently teaches a corequisite course for its College Algebra/Precalculus course and its Quantitative Literacy course. The corequisite, or support, portion of the course follows the following structure: Review, Preview, Active Learning.

During the review portion of the course meeting, the instructor addresses the content the students just learned in their college-level course and addresses any misunderstandings or confusion. Then they move on to the preview portion, where the instructor introduces the skills and topics that are coming up in the college-level course. Finally, the class participates in active learning together where they practice lower-level, simpler problems that introduce the forthcoming topic in the credit-bearing course.

In order to make sure that this Review, Preview, Active Learning format was most effective, coordinators decided to time the support course right after the credit course, thus implementing stacked learning. Instructor Anne Fischer finds that teaching the support course after, rather than before, is more beneficial.

A CLOSER LOOK: Spaced learning

**Jackson State Community College** offers a spaced learning corequisite program with students concurrently enrolled in the for-credit Statistics course and a supplemental lab if they scored less than a 19 on the math ACT. The lab component specifically addresses the need for support by having students work through modules which are completed in a self-paced environment. Students enrolled in the lab must attend three hours per week in addition to the course.

The goal of this strategy is to increase retention and success. While still in the early phases, anecdotal evidence shows retention rates are improving in spite of student push back for having extra hours of statistics each week with the lab. To others creating a coreq program, faculty recommend to prioritize advising students so they understand what they need to take and why.
How will the support course content be timed?

When encountering students who require support alongside enrollment in their first college-level math course, it’s important to decide how the timing of the support course content will be handled.

**Concurrent timing:** Presenting the content concurrently allows the support content to be aligned to the credit content throughout the semester, so students learn material just in time, in related sections.

**Consecutive timing:** Organizing content consecutively dedicates the first portion of the course to covering developmental topics before moving on to credit-level content. This organization ensures developmental topics are studied and mastered as a unit before students are exposed to higher-level concepts later in the course.

Depending on the topics being included in the course, some schools choose a blend of the two, choosing to present content concurrently, but with some developmental review front-loaded.

**A CLOSER LOOK: Concurrent timing**

At Murray State University, students in the corequisite program spend an extra class day working in a module in MyLab Math. The module is a review section of what they may or would have seen in a developmental algebra class. The instructor tries to organize the content concurrently so that students complete the developmental module before they need the prerequisite knowledge in the credit portion of the course.

Students have two weeks to complete each module and can work on the next one ahead of schedule should they achieve a minimum score of 85% on the post-test. Each post-test consists of 10–15 questions and takes around 35 minutes to complete. Students receive a completion grade for this specific portion of the course.

**A CLOSER LOOK: Consecutive timing**

In order to comply with state policies, Stanly Community College created a just-in-time, boot camp-type intervention that would quickly get students up to speed so they could be successful in the Quantitative Literacy course. The Let’s Go Racing Modules Intervention (RMI) helps students succeed by identifying gaps in prerequisite knowledge and subsequently providing appropriate lessons for review of relevant material.

Faculty encouraged all students, regardless of whether they were in need of support or not, to brush up on the content in the modules during the first two weeks of class, and 97% of students between Fall 2014 and Fall 2015 completed the RMI series. Between Fall 2014 and Fall 2015, success rates rose 23 percentage points for students with a high school GPA 2.6–2.99 and 67 percentage points for students with high school GPA of 3.0 or above.

The department has found the module implementation to be cost effective for both the college and the student, and Stanly now implements this strategy across their three gateway courses: Precalculus Algebra, Statistics, and Quantitative Literacy.

“*I believe the Pit Stops were a good use of my time. It helped trigger some of the things I was taught in high school and had forgotten.*”

—Student, Stanly Community College
In order to give students a cohesive experience, you’ll need to decide whether to organize them into cohorts or co-mingle them. Both options have benefits and drawbacks, so it’s important to think through what your department is able to handle logistically.

**Cohorts** separate students in need of extra support into their own credit-level section of a specific course, so even though they are enrolled in the same credit-level course as every other student, their specific section includes only those who are also co-enrolled in the corequisite support.

**Co-mingling** students blends those students in need of support into the same credit-level sections as college-ready students.

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**A CLOSER LOOK: Co-mingled students**

For students at Pellissippi State Community College in need of support in statistics, an additional two credit hours are offered for those who have Math ACT sub-scores of 17–18 or COMPASS Algebra scores of 27–37.

While concurrently enrolled in the three-credit hour Introductory Statistics course with college-ready students, the students in need of support work on mastering prerequisite mathematics and the skills needed for success in the college-level course. This is accomplished through supervised lab time in a designated academic support area each week to complete assignments covering topics from both courses. This structure helps ensure that coverage of knowledge gaps directly informs the content being covered in the college-level course.

Students were co-mingled in order to make it unclear to the class which students were in need of support. The blending of the two groups of students addresses an issue co-enrolled students were experiencing of not feeling like a part of the college. The transition to a corequisite program in this format increased the completion rate of the college-level course by 13.6% at the end of the semester, and:

63% of students completing an end-of-course survey agreed that the coreq program helped them in the college-level course.

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**A CLOSER LOOK: Cohorts**

At Murray State University, students are broken into cohorts based on whether there is a need for support. If there is a need for support, those students meet five times per week instead of four. The extra day is spent working in a module in MyLab Math. The module is a review section of what they would have seen in a developmental algebra class.

The first semester offering this course was completed in Fall 2017, concluding with a voluntary, end-of-semester student survey where:

85% of the class agreed that they liked having the same peers in both the college-level portion and modules portion of the course.
Once you’ve established the design of your corequisite program, the next steps involve creating a syllabus and deciding how technology will factor into your program. The following section discusses what to consider when setting up and delivering your MyLab Math or MyLab Statistics courses and is organized around the four “pillars” considered in part one: **instructors, course delivery, content timing, and student body**, as it is likely that your decisions in these areas will affect how you want your MyLab course set up.

1) **Instructor Considerations**
   - Course Shell
   - MyLab Gradebook

2) **Course Delivery**
   - MyLab Assignments & Member Courses

3) **Content Timing**
   - MyLab Learning Path

4) **Students**
   - Assessing Needs
   - Personalizing Experience
   - Building Soft Skills
Instructor Considerations: Course Shell

Whether you will have one or two instructors, you will need to decide if you want one MyLab course shell with all material delivered together (i.e., one gradebook containing both support course and college-level course results) or a separate course shell for each instructor and/or level of content.

One course shell

One main advantage of using a single course shell is the convenience factor for students — they only have to go to one course. The instructor can link support course assignments to appropriate credit course assignments using MyLab's prerequisites function.

Options for co-mingled courses: (1) allow all students access to all assignments, regardless of level, and use MyLab’s Student ID feature in the gradebook to group the students as coreq/non-coreq, or (2) use MyLab’s individual student settings feature to select and assign the support material assignments to the coreq students only.

If a separate grade will be assigned for the support and credit portions of the course, then the instructor could use the Omit Results and Advanced Export features of the gradebook to selectively include assignments in the MyLab portion of their grade, or to average separate grades offline, respectively.

Separate course shells

Two course shells for each content level may make it easier to manage each course, particularly if different faculty are teaching the support and college-level courses and two grades are being assigned. However, two course shells with different instructors means two separate gradebooks, so a good communication plan between instructors is needed in order to identify at-risk students in each section of the course.

One solution is to create both courses under one account that both instructors can access. This way, both instructors have full visibility into both courses and their respective gradebooks and can quickly access their students’ performance in both courses. Another solution would be for the lead instructor in one course to add the other as a section instructor and vice versa to help support communication.

A CLOSER LOOK: 2 instructors, 1 MyLab course

In order to manage the department’s budget, as well as instructor teaching load, Redlands Community College opted to have their instructors team-teach the four-hour corequisite version of their College Algebra course. The corequisite sections include a cohort of students who meet together four times a week and login to one MyLab course that contains both support work and college-level work. Department head and course coordinator Rachel Bates created the standalone College Algebra course in MyLab Math and copies it for the corequisite version, adding in about 10–15 support assignments for the corequisite students to complete. Therefore, the corequisite cohort is taking the exact same College Algebra course as everyone else, but they complete additional required support content.

A CLOSER LOOK: 1 instructor, 2 MyLab courses

Pellissippi State Community College prioritizes having the same instructor for both courses to provide cohesion between the two. Students are co-mingled in the college-level course, so while they have one instructor, they login to two different MyLab courses. Each week, corequisite students are able to complete assignments covering topics from both courses during designated and supervised time. This integration helps ensure the corequisite course supports students in a way that directly contributes to their success in the college-level course.
Instructor Considerations: MyLab Gradebook

Regardless of how your courses are set up in MyLab, there are a few features in the gradebook that aid instructors in quickly and easily identifying areas within the course where students are struggling so they can be addressed immediately.

**Skill Builder**, available in select Developmental Math and College Algebra titles, offers students support on an as-needed basis while they engage in homework assignments. Instructors are able to see **Skill Builder alerts** in the gradebook to learn more about when and where students are using the tool, highlighting any common areas of struggle.

**Search/Email by Criteria** allows instructors to pinpoint a certain segment of their student population and message them directly. As an example, one search criteria option is based on assignment performance. This gives instructors the ability to intervene with struggling students and commend students who are doing well.

Specifically for a course structure under a single shell, the **Advanced Export** or **Quick Export** gradebook feature can help determine where students are struggling across multiple sections of the course. The data may help influence the use of a review guide or worksheets and/or supplemental assignments.

**Gradebook Inactivity Alerts** not only notify instructors when students aren’t completing work, but then allow instructors to reach out to those students directly through the Search/Email by Criteria feature. Available for select courses in Fall 2018, **Early Alerts** uses seven key data points to provide instructors with valuable insights into student performance.

Within the **Reporting Dashboard**, the Mastery Report gives instructors the ability to view the percentage of students who mastered any given learning objective within the course. The report can show results of student performance within a specific section, for the entire course, or across multiple courses.

**Item Analysis** looks back on recent assignments or quizzes and gauges the level of success students had with particular exercises and objectives, bringing to light areas of weakness.
Course Delivery: MyLab Assignments & Member Courses

MyLab assignments
Consider using due dates to keep students on track and posting a pacing guide online with the content to be covered in each session.

Integrated Review assignments, available in select titles, are made up of a Skills Check Quiz that personalizes the Skills Review Homework. These assignments consist of the prerequisite material students in the support course need to know in order to be successful in each college-level chapter.

Skill Builder, available for select titles, is a just-in-time adaptive practice available directly in a homework assignment that allows students to build the necessary skills to complete the “target” homework question. Skill Builder recommendations are based on: (1) the concept map, in which all course objectives are placed with prerequisite skills defined, and (2) the learner profile, where students’ knowledge and performance are tracked in MyLab. The more work a student does in the system, the more robust the learner profile becomes and hence the more accurate recommendations become.

Media assignments: If you feel you are lacking time in your course, you can provide students with additional instruction and support by building media assignments to assign students lecture videos, eText sections, and PowerPoints to name a few. With media assignments, students can receive instruction or reinforce concepts on their own time. The videos available through MyLab are specifically designed for use with a particular text and feature consistency in notation, approach, and voice. These resources can be found in a central location within the Multimedia Library of the MyLab course, organized by text section for easier integration.

Worksheets: Requiring a student notebook and using worksheets will keep students organized and on track with their assignments. These can also serve as a basis for groupwork, and many workbooks include activities. Many textbooks have their own worksheets or note-taking guides that can either be printed from the MyLab or packaged with the text or the MyLab access code kit. Integrated Review worksheets on prerequisite topics may also be available.

A CLOSER LOOK: MyLab assignments
Dr. Sunshine Gibbons at Hillsborough Community College offered Skill Builder to her students in multiple courses so that those who were struggling could continue to work on a particular skill without it affecting their homework grade. Dr. Gibbons also incorporated the Integrated Review feature to provide students with just-in-time support within a course.

• On an end-of-semester survey, 79% of students agreed that the Skill Builder helped them learn the course material.
• Students earning higher scores on their Integrated Review assignments also earned substantially higher average chapter review quiz scores.

Coordinator/member courses
Choosing the coordinator/member course setup allows changes to be made across all sections of a course from a single spot, enabling course coordinators to modify assignments or objectives quickly.
Content Timing: MyLab Learning Path

Depending on how and when you want students to engage in the MyLab and their assignments, you may find a MyLab Learning Path to be very useful in your MyLab course (screenshot below). MyLab’s flexible design allows you to customize when students see the content you want them to be working on, helping them to focus on what is important. For example, you can modify the left-hand navigation bar and Learning Path to separate the corequisite content from the credit-level content, telling students what to go to and when.

The MyLab Assignments page provides students with a complete overview of their assignments for the course. When using the Change Dates & Assign Status link from the Assignment Manager, the instructor can adjust the assignment availability dates so that students only see what they need at any particular time. No matter what, the design options in MyLab allow you to deliver your course materials in a way that supports student workflow.

Example of prebuilt Integrated Review Learning Path
Assessing needs
Determining the level of the students in the support course not only helps to inform how many hours are needed for the support course, but also helps influence how much prerequisite content an instructor will need to incorporate into his or her course. For corequisite students, instructors can evaluate what level the students tested into when planning what objectives to focus on within the course.

Need can also be assessed at the start of the course with options like a diagnostic test created in MyLab that pairs with the Companion Study Plan or a Personalized Homework assignment focused on skill review. Additional review assignments can then be worked into the syllabus in appropriate amounts to assist students with skill mastery.

Questions to think about:
- How much support is needed?
- How much extra help do students need on credit-level content?
- How much work will focus on soft skills?
- How much work will be completed through technology vs. classroom activities and/or group work?
- Will all students need to focus on the same objectives in the support course?

Personalizing experience
By providing students with the ability to personalize their journey through the course, instructors can keep students motivated to master objectives and succeed. Personalized Homework gives instructors the ability to create a homework assignment linked to a previously created test or quiz, while the Companion Study Plan allows instructors to assign a subset of the Study Plan in MyLab as a test prerequisite. Both features help students identify areas where they are struggling and get the support they need to succeed.

A CLOSER LOOK: Personalized Homework
Southwest Tennessee Community College utilizes Personalized Homework in their corequisite Probability & Statistics course when students are in need of additional practice. The course is structured in a progressive manner with students having to make a 70% or higher on the exam at the end of each module in order to move on in the course. If they do not reach the minimum score, they are assigned Personalized Homework for more practice derived from the Test Out problems they missed. Students must score 100% in order to move on. This pattern continues for all tests and quizzes offered in the corequisite course.
The nature of corequisites places students who might otherwise be in a developmental-level course into a credit-bearing one — which can be an overwhelming experience! Focusing on soft skills can be essential for co-enrolled corequisite students.

Using the features in MyLab not only helps students master mathematical content, but it also gives them opportunities to build important skills they will use in future courses, as well as in their careers. Time management, strong communication, good study skills, and organizational skills are considered key soft skills for individuals entering a professional environment.

**Organizational skills**
Worksheets, available in print and in the MyLab, give students a designated spot to take notes while helping them focus on the important concepts of the course. Reinforcing the idea of recording and keeping work encourages good student habits and preparation. Other workbooks are in a guided-note format, providing a space for note-taking and helping students review content.

**Growth Mindset**
Research, such as that from Carol Dweck at Stanford, has shown that those with a growth mindset believe that abilities can be developed through hard work rather than derived from innate talent. You can help foster your students’ growth mindset with new Mindset videos and corresponding assignable exercises in our more recent MyLab Math and Statistics courses. This material encourages students to value their own ability to grow and help them view mistakes as a learning opportunity — so often a hurdle for math students. A Mindset Instructor Guide is also available to provide suggestions on incorporating these materials into your course.

Encouraging students to develop these skills will help them stay motivated and productive as they work, cultivating a love of learning and a resilience for when things get tough.

### A CLOSER LOOK: Building soft skills

**State College of Florida** utilizes the Video Organizer within MyLab Math in order to successfully deploy an eight-week, self-paced, accelerated course which prepares students to take math for credit. Assistant Professor Kim Ghiselin has students complete the Video Organizer after watching Lecture Videos for each section of the text. This activity encourages students to not only take notes and work practice exercises, but also helps them develop good study habits. Throughout the process, students create a course notebook within the Video Organizer which they submit for grading during paper-and-pencil midterm and final exams.

Since implementing the Video Organizer, pass rates in the course have risen by 20 percentage points. Ghiselin attributes the improvement to an increase student engagement with the course content, the ability for students to work problems while watching the videos, and a more organized note-taking process — all of which are enabled by the Video Organizer.
Don’t forget to plan out a strategy that measures success both qualitatively and quantitatively. Perhaps you want to examine how would-be developmental students performed in credit-level courses after a corequisite implementation compared to other students. Possible measurements to consider could include:

**Qualitative:**
- Observations about student participation during class
- Feedback from pre- and/or post-semester student surveys
- Volume of students attending office hours
- Types of questions students ask

**Quantitative:**
- Success and retention rates
- Exam and standardized test scores
- Final course scores
- Homework participation and performance
- Correlations between homework and assessments

Faculty who consistently track and measure learning gains can make informed decisions about whether or not their course is meeting all the goals previously set. Tracking these metrics will help you understand learning and learner outcomes, student engagement, and student experiences. These will then influence the need for modifications to your course, if any, to continue improving student success.

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**Set students up for success**

Whether or not students embrace and use the resources available to them impacts their level of success in the course. At the start of your course, prioritize giving your students a basic knowledge of the technology in order to help them feel confident with it throughout the semester, especially as workloads increase and students begin to procrastinate. On the first day of class, consider taking some time to:

- Show students the required technology;
- Walk students through the registration process; and
- Have students run a systems check on their devices to ensure all digital resources work properly.

You also might want to consider assigning an introductory lesson within your technology program during the first week of class to explain the features of your product in order to ensure students get registered and become familiar with the technology.
Conclusion

The decision to use a corequisite course structure to help students find success is a big one! The options, strategies, and tips shared here can help you begin your journey toward developing a corequisite program.

Should you need additional support at any stage of developing a corequisite program, your local Pearson representative is always ready and willing to help you navigate the intricacies of shaping a new course — from the syllabus to the technology. If you’re unsure of who your Pearson rep is, please use this rep locator for help. You can also access 24/7 training & support, including Quick Start guides, Planning Toolkits, and How Do I? videos via the MyLab website.

Finally, explore Pearson solutions for your corequisite course in this digital brochure or on this website.