**Department/Program Review**

**Self-Study Report Template**

**2015 - 2016**

**Department:** **0712 – Developmental Math**

**Section I: Annually Reviewed Information**

**A: Department Trend Data, Interpretation, and Analysis**

**Degree and Certificate Completion Trend Data – OVERALL SUMMARY**

**NOT APPLICABLE**

**Course Success Trend Data – OVERALL SUMMARY**

Between the Fall of 2012 and the Summer of 2015, the average success rate (percentage of students who received a grade of “C” or higher) for the DEV 0020 course was 58.5%. It is noteworthy, however, that the success rates for this course increased from 56.1% during the 2012-2013 AY to 62% during the 2014-2015 AY. The DEV 0022 course witnessed an average success rate of 66.8%. The DEV 0024 course witnessed an average success rate of 67.7%. Similar to the DEV 0020 course, the success rates trended upward. The success rates for DEV 0024 increased from 65.9% during the 2012-2013 AY to 69% during the 2014-2015 AY. The DMA attributes to the increase in success rates within this time period to being able to study our results and making modifications based on those data. The average success rate for DEV 0026, during the aforementioned period, was 71.4%. In the fall of 2015, we implemented a redesign process where we compressed our required sequence from four courses to three.



Please provide an interpretation and analysis of the Course Success Trend Data. Please discuss trends for high enrollment courses, courses used extensively by other departments, and courses where there have been substantial changes in success.

Please be sure to address strategies you are currently implementing to increase course success rates. What plans are you developing for improving student success in this regard?

Since 2012, our student success rates have remained consistent with those in SME (Science, Mathematics, and Engineering) and at Sinclair (college-wide). Starting in 2012, the DMA witnessed an increase in student success rates from the previous three years. More specifically, between 2009 and 2012, the overall success rates for developmental math classes were 54%. Between the Fall of 2012 and the Summer of 2015, the overall success rates for DMA increased to 66.5%. When preparing to convert to semesters, the faculty studied the DMA curriculum very closely to understand what had been effective and ineffective (i.e. content and pedagogical practices). Consequently, we retooled our curriculum in such a way that we felt would be beneficial to students. We also worked closely with the math department to align our curriculums. In the Fall of 2014, we were directed, by the administration, to implement a redesign for Fall of 2015 that would allow students to progress through their developmental math sequence at a quicker rate, which would increase their chance of completion. Therefore, we executed a redesign, where we shortened our developmental math pathway from four courses to three. In our latest redesign, we also implemented embedded contextualization so that students could develop a deeper conceptual understanding of mathematical topics. The utilization of contextualization was in compliance with the Connect 4 Completion Grant. As directed by our dean, we also have embeded the MyMathLab (MML) online software program into our face-to-face courses. The use of MML provides students with multi-media tools when completing homework assignments, and it aligns us with the requirements of the math department.

Please provide any additional data and analysis that illustrates what is going on in the department (examples might include accreditation data, program data, benchmark data from national exams, course sequence completion, retention, demographic data, data on placement of graduates, graduate survey data, etc.)

Since we are a department, not a program, much of the aforesaid data (accreditation, program data, national exams, placement of graduates) are not applicable. Therefore, the Provost’s Office requested that we discuss sequence-completion and persistence rates in this section. With regard to sequence-completion, from the Fall of 2012 through the Summer of 2015, a total of 24.5% of the students who placed into developmental math completed DEV 0026 (highest DMA course) or the equivalent (DEV 0026 boot camp) in one year. Since we reduced the number of courses within our sequence from four to three, the DMA is confident that this percentage will improve. Also, it is extremely noteworthy, however, that the aforementioned success rate only pertains to students who completed DEV 0026. For many of our students, DEV 0024 was an exit course, and those data are excluded. According to RAR, these would be difficult data to ascertain as it would require researching students’ specific program of study. In fact, a total of 1,404 students exited their developmental math sequence after successfully completing DEV 0024 to enroll in either MAT 1120 or MAT 1130. This accounts for 41% of all the students, between 2012 and 2015, who successfully completed a developmental math sequence and attempted an MAT course. In summation, the 24.5% is not a true measure of the students who completed the developmental math sequence in one year as it excludes the students who completed DEV 0024 and moved on to MAT 1120 or MAT 1130. Moreover, this percentage would be higher if it included the DEV 0024 students who transitioned to either MAT 1120 or MAT 130.

With regard to persistence rates (success in the introductory math course after completing an exit level developmental math course), data from RAR shows that between the Fall of 2012 and the Summer of 2015, 49% the students who completed the highest level developmental math course (DEV 0026) were successful in MAT 1270. It is noteworthy that many of our students are not required to take MAT 1270 and follow this aforesaid pathway. For these students, DEV 0024 was the exit course. During this aforementioned time period, 52.2% of the students who completed DEV 0024 successfully completed MAT 1120, and 64.5% of the students who completed DEV 0024 successfully completed MAT 1130. However, this is an area we would like to explore more thoroughly within our new curriculum redesign:

It is imperative to recognize that there are many contributing factors (i.e. difficulty with content beyond DMA level, poor attendance in the MAT 1120, 1130, and 1270 course, etc) which may affect student success throughout these courses. The DMA would like to greatly reduce or even eliminate various contributing variables when assessing persistence rates. Therefore, the DMA would like to work with the math department to determine more accurate ways to ensure that DMA students are prepared for MAT 1120, 1130, and 1270.

We can then use these data when assessing our redesign.

**B: Progress Since the Most Recent Review**

Below are the goals from Section IV part E of your last Program Review Self-Study. Describe progress or changes made toward meeting each goal over the five years since the most recent Program Review.

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| **GOALS** | **Status** | **Progress or Rationale for No Longer Applicable** |
| DMA has been scaling up Math Modules and Boot Camps to serve more students. These modalities will move from “297” designation to “real” courses in semesters. ACA is also in the process of re-vamping all web courses for semester format. | In progress [ ] Completed [x] No longer applicable [ ]  | In the summer of 2012, the computer lab (Math Academy) was renovated and expanded to contain 55 computers. As a result, the class size has increased to 44 students. Each class time offers multiple levels (currently DEV 0025 and DEV 0028) of developmental math, which provides the opportunity to maximize the lab space. The lab is open all week, including weekday evenings and Saturday mornings. Math Academy students appreciate having the ability to utilize the lab during their breaks and they appreciate having a tutor available at all times to assist them with questions. The Math Academy has been offered at all of the satellite campuses in the stacked format (classes that consist of students from multiple course levels) as well. The Math Academy modality offers to the opportunity tocomplete more than one course level in a given 8-week term. During Fall A-term, 2015, a total of 22 students completed two courses in one term. During the 2014-2015 AY, 93 students completed two courses in one term and 17 students completed 3 courses in one term. Multiple – course completion is part of the accelerated learning model under the Developmental Education Initiative. Boot Camps continue to be a viable option for some students to continue on their pathway to completion. The Boot Camps are currently being offered three times during the calendar year, both in the day and evening. In a boot camp, students can complete the requirements for a DMA course in one week. Boot camps are best suited for students who fail a DMA course by a tenuous margin or narrowly miss placing into a specific DMA course. The Boot Camps were a part of the department’s major curriculum redesign for fall 2015. The number of Boot Camp courses was reduced from four to three. This should further shorten the pathway to completion for students needing these short-term coursesThe DL courses are currently offered to DEV 0025 and DEV 0028 students. In the fall of 2017, DEV 0020 will be offered online to the CCAF GEM (Community College of the Air Force General Education Mobile) program. The Distance Learning courses, under the new curriculum, were updated to the eLearn Learning Management System during summer 2015.  |
| Reading faculty are working with the Biology Department to create biology–specific reading modules to help increase success in biology. These interactive lessons could be expanded to other disciplines. A “dream” would be to combine a course such as ALH 103 with DEV 065 (Reading) as a learning community | In progress [ ] Completed [ ] No longer applicable [x]  | The LCS Division’s Academic Foundations Department formerly included three areas: developmental reading, developmental English, and developmental mathematics.  In 2013, the developmental math area became the SME division’s Developmental Mathematics Department. |

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| **RECOMMENDATIONS** | **Status** | **Progress or Rationale for No Longer Applicable** |
| The mission statement for the department that was provided in the Self-Study does not mention preparation for college-level math and English courses as the department’s central purpose and should be revised accordingly. The mission statement overall would benefit from being more concise and focused. | In progress [ ] Completed [x] No longer applicable [ ]  | RevisedThe Developmental Math Department is committed to providing a learning centered curriculum and approach which engages students and prepares them for college level courses. Through a variety of methodologies, the Developmental Math program’s mission is to meet the needs of Sinclair’s diverse study body by providing flexibility and equity and empowering students to attain higher education goals regardless of their previous mathematical experience |
| The current program outcomes for the department mirror the college’s General Education outcomes. It is recommended that the department develop program outcomes that support the General Education outcomes, but that are clearly tailored to developmental education.  | In progress [x] Completed [ ] No longer applicable [ ]  | In consultation with our learning liaison, the DMA developed program outcomes that are specially tailored to developmental math. Those outcomes are listed in Section D of the self-study.  |
| While the department has collected a tremendous amount of data, it appears that to a large extent this data has not been interpreted, synthesized, and then used to inform changes. The department is encouraged to work with RAR to develop a plan for its use of data, including delineation regarding what routine data collection, analysis and interpretation the department will handle versus what RAR can best manage.  | In progress [x] Completed [ ] No longer applicable [ ]  | The DMA used data from RAR to determine that students who completed their developmental math sequence at a quicker rate had a greater chance to complete their degree. Consequently, the AY 2014-2015 was devoted to a major curriculum redesign. Therefore, no formal data collection efforts were tasked by the chair, as all faculty were involved in the redesign work. The AY 2015 – 2016 offers the next opportunity to collect and analyze data in order to measure the effectiveness of the curricular changes. Therefore, the DMA is using data from RAR to determine the construct validity of our redesign and whether modifications must be made.RAR has provided formal analyses of the Math Academy and other DEI (Developmental Education Initiative) – related courses such as the DEV math Boot Camps. These have been widely disseminated to the college’s key stakeholders. These data have been used as a way to assess the progress of DEI courses.  |
| Similarly, while the department’s efforts in developing common assignments and exams have been good, it does not appear from the Self-Study and review meeting that data on student outcomes at the course and section level is currently being collected and used to improve teaching and learning. The review team recommends that the department capture and mine this rich source of assessment data, analyze results and document findings. Assessment results collected in this manner should be reported in Annual Updates beginning next year and in the next Program Review self-study. Few departments at Sinclair are as well positioned to document student learning so completely and comprehensively, and it is recommended that the department take the next step to make this a reality.  | In progress [x] Completed [ ] No longer applicable [ ]  | When we redesigned our developmental math courses for semesters in 2012, we began conducting an item analysis on our final exams and all of our assessments. Each instructor, from the Dayton campus, would report the number of correct responses to a specific exam question. The course coordinators would tally the responses and convert to a percent. This allowed the department to determine the construct validity of each question. Based on this information, we are able to discuss and decide if a question needed to be reformatted or if we needed to alter our pedagogical strategies to help students understand a specific concept more in-depth. In 2015, we took our item analysis to another level. After undergoing another redesign, where we compressed our courses, we implemented a multiple choice final and employ scantron sheets. Again, we use the scantron sheets as a tool for item analysis. This updated method allows us to gain broader data as we now collect final exam data from the entire population of DMA instructors. Again, we are using these data to study the construct validity of our common assessments. It is also noteworthy that we have continued to conduct item analysis for all new unit exams as well. All of this is allowing us to make needed modifications to better serve our students.  |
| Building on the foundation for assessment that has been laid with common assignments and exams, it is recommended that the department work with its divisional Learning Liaison to develop a formal assessment plan to work through the issues related to collection, analysis, interpretation, and reporting of assessment data. RAR can also be a valuable resource in this regard.  | In progress [ ] Completed [x] No longer applicable [ ]  | The chair has met with our Learning Liaison for a clear and concise plan for assessment. The new curriculum was implemented in the Fall 2015. Therefore, the department has set forth on a comprehensive plan to assess the various data of completion and success.New Final Exams have been designed as part of the new curriculum, and the exams will be processed through RAR and item analyses and other measures will be used to assess the Course Outcomes. Other data collection efforts will be focused on the qualitative data that will be generated from the in-class activities and contextualized learning opportunities that are included in the new curriculum. |
| There is some indication that pilot studies in the department may have been compromised in some instances by having the practices being studied used in sections other than those assigned to use them, confounding the research results. The department is encouraged to maintain the integrity of any pilot studies, and utilize the services RAR offers in designing and implementing any future pilot studies.  | In progress [ ] Completed [ ] No longer applicable [x]  | The department has no new pilots at this time.A new curriculum has been designed during the 2014-2015 with a fall 2015 implementation. Extensive data collection is being conducted throughout the 2015-2016 AY. |
| The department is encouraged to forecast enrollment on a yearly basis. The higher education environment related to developmental education is changing significantly, and the institution will want to stay on top of any trends that emerge that may either increase or decrease DEV enrollments. The department would be well served by paying close attention to changes in high schools and colleges that could impact developmental education enrollment and plan accordingly. | In progress [ ] Completed [x] No longer applicable [ ]  | This is an on-going process due to not only the changes outside of the college but also because of new initiatives to accelerate students through their developmental courses faster.The department’s interim chair met with the Budget Analyst, during the 2014- 2015 AY, in order to work on projections for Fall 2015 and Spring 2016’s DEV math enrollments. The new curriculum redesign posed some challenges to the projections – 4 courses reduced to 3, one less Math Academy course level and one less Distance Learning course level, but we believe that both the students and the fiduciary duties of Sinclair were met for the 2015-2016 AY.A result of the budget meeting in April 2015, the Annualized FTE projection for Fall 2015 for DMA is 380 and that for Spring 2016 is 360. In summation, DMA has monitored the trends of enrollment very carefully. Furthermore, the department has used these trends to forecast the need for sufficient section offerings to meet the needs of our students. DMA has also monitored external factors such as the new requirements that ACT scores greater than or equal to 19 automatically place students into a college credit bearing math course to predict enrollment in DMA courses as well.  |
| Similarly, changes at the state and national level in developmental education practice and policy are occurring quickly, and the department’s work will be well served by understanding these changes and their implications for developmental education at Sinclair. It is recommended that the department maintain an openness to substantially new and innovative approaches and structures, and a willingness to adapt as new best practices emerge in the field. Changes in the area of developmental education will be inevitable in the future, and the department will need to be prepared to take these changes in stride and, hopefully, help shape these changes. Without question, an important challenge for the department and Sinclair is identifying sound approaches to helping students accelerate their completion of basic skills so they can perform successfully in their college-level courses.  | In progress [ ] Completed [x] No longer applicable [ ]  | There has been a push from state legislation to accelerate students through their developmental sequence at a quicker rate. This push has stemmed from studies such as Bailey, Jeong, and Cho (2010) that found that students who progress through their developmental math sequence at a quicker rate are more likely to complete their college degree. Similar results were found internally from Sinclair’s Completion by Design study. More specifically, Completion by Design found that only one in every 100 students who began the lowest level DMA class persisted to College Algebra. Consequently, in the Fall of 2015, the DMA compressed our required course-sequence from four courses to three. This allows students to progress through their developmental math sequence at a more rapid pace. During this redesign, our department also implemented the use of contextualization into our face-to-face courses. Studies have also shown that being able to relate mathematics to real-life concepts positively impacts their learning. As a result, we have added several applications to our courses to help students relate mathematical concepts to their own lives. We are currently conducting end of the semester surveys to better understand if we need to make further modifications to these activities.  |
| Many of the issues raised in the self-study and in the discussion in the review meeting suggest that span of control may be an issue for the department. With such a large department, and with a number of initiatives ongoing simultaneously, it may be a challenge for the chair and faculty leaders to stay on top of everything. It may be in the department’s best interest to determine which activities are most valuable and focus resources in those areas.  | In progress [ ] Completed [x] No longer applicable [ ]  | Due to the separation of Academic Foundations into 2 separate departments the challenges have become much more manageable.  |
| While it is clear that all faculty in the department have strong feelings of commitment to their students, it is likely that some faculty have successfully developed approaches that are particularly effective and beneficial to students. It is recommended that the department identify best practices among its faculty based on clear evidence of student success in courses over time, communicate these practices and widely adopt those best practices that are supported by evidence | In progress [ ] Completed [x] No longer applicable [ ]  | DMA has implemented practices that have proven successful on a national level. Such practices include the utilization of contextualization, where students apply mathematical concepts to real-life applications. While DMA has utilized the internationally recognized software program, MyMathLab (MML) since 2007, the department has implemented MML as a required part of homework assignments for face-to-face classes. The use of MML allows students to gain interactive feedback while completing homework assignments as well as providing them with various online resources.The DMA has also continued to offer the emporium model (Math Academy) to our students. The emporium model has proven to be an effective practice on a national level.Many of our faculty members also attend regional and national conferences such as the Ohio Association of Developmental Education (OADE) and the National Association of Developmental Education (NADE). Parts of department meetings have been devoted to allowing faculty to share various best practices that they have discovered and have deemed effective. The DMA faculty also continued to participate in the Global Skills Initiative. Sinclair received this grant, which focused on identifying best practices, from the Gates Foundation in 2009. During the 2012-2013 AY, several instructors from DMA participated by sharing their best practices in an online forum. This provided an opportunity for discussion and for DMA faculty to learn about innovative and effective practices.  |
| On a related note, the department should identify those practices currently being piloted that provide the best evidence of enhancing student learning, and find ways to scale those practices to reach a larger number of students. Much work has been done investigating new approaches, and the department has reached a point where the most promising approaches need to be expanded to serve a greater number of students. | In progress [ ] Completed [x] No longer applicable [ ]  | Between the Fall of 2012 and 2015, there were two DMA pilots that were brought to scale. From 2013-2015, selected DMA instructors piloted contextualized activities that were entitled “Why Math Why Me?” The purpose of this pilot was to explore methods to embed contextualization into developmental math. The selected DMA instructors used the activities for two academic years. At the end of each 8-week term, the selected DMA instructors had the students complete surveys to convey their feedback on whether or not the activities helped the students begin to think about the use and impact of mathematics on their daily lives. The lead DMA faculty then analyzed these data to make modifications to these activities. These contextualized activities were then implemented to scale in the Fall of 2015, meaning that all full and part-time faculty were including and using the activities in their classrooms. It is also noteworthy that, at the request of our dean, many of our contextualized activities are directly related to Science, Engineering, Mathematics, and Technology. Such applications allow students the opportunity to decide if they wish to pursue careers in the aforesaid fields. From 2013-2015, selected DMA instructors piloted the mandatory employment of MML into face-to-face classes. The purpose of this pilot was to assess the effectiveness of MML as a homework tool in these classes. In the Fall of 2015, MML became a universal requirement for all DMA face-to-face classes. This requirement seeks to better prepare DMA students for MAT 1270, which has a very large MML requirement.  |
| There are a number of support mechanisms in place that are available from Student Services – Early Alert, for example. The department should ensure that it is taking full advantage of these support mechanisms and that it maintains a strong collaborative relationship with Student Services. The department is asked to set goals for increasing use of these services, such as setting a goal that 100% of developmental sections will utilize Early Alert when appropriate for students in the section. | In progress [ ] Completed [x] No longer applicable [ ]  | Each semester, all DMA faculty are encouraged to employ the Early Alert System when it is appropriate for students. Training for adjunct faculty has been provided on Early Alert during orientation sessions. DMA faculty have also participated in the ASAP (Academic Success Assistance Program) system. |

**C: Assessment of General Education & Degree Program Outcomes**

Sinclair General Education Outcomes are listed below. Please report assessment work that has been done in these areas since the last Program Review. *It is recommended that General Education assessment work that has been reported in department Annual Updates for the past several years form the basis for this section, although departments are strongly encouraged to include any General Education assessment that was not previously reported in Annual Update reports*.

**The DMA values and incorporates many of the Sinclair General Education outcomes. However, the Assessment Committee has determined that General Education outcomes should not be assessed for mastery in developmental education courses.**

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| **General Education Outcomes** | To which degree(s) is this program outcome related? | Year assessed or to be assessed. | Assessment MethodsUsed | What were the assessment results? (Please provide brief summary data) |
| Critical Thinking/Problem Solving | All programs | **2012-2013** |  |  |
| Values/Citizenship/Community | All programs | **2013-2014** |       |       |
| Computer Literacy | All programs | **2014-2015** |       |       |
| Information Literacy | All programs | **2015-2016** |       |       |
| Oral Communication | All programs | **2017-2018** |       |       |
| Written Communication | All programs | **2017-2018** |       |       |
| **Are changes planned as a result of the assessment of general education outcomes? If so, what are those changes?**  |  |
| **How will you determine whether those changes had an impact?**  |  |

The Program Outcomes for the degrees are listed below. **All program outcomes must be assessed at least once during the 5 year Program Review cycle, and assessment of program outcomes must occur each year**. At the time this self-study was completed, the success rates from the Fall of 2015 were not available. These data will be available, however, during the review.

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| **Program Outcomes** | To which course(s) is this program outcome related? | Year assessed or to be assessed. | Assessment MethodsUsed | What were the assessment results? (Please provide brief summary data) |
| Students will be able to add, subtract, multiply and divide whole numbers and fractions. Students will also demonstrate appropriate approaches to solving applied problems. | ***DEV 0020*** | AY 2015-16 | Formative and Summative Assessments; in-class and contextualized activities |  |
| Students will be able to use fractions, decimals, signed numbers, proportions and percentages in a variety of computational and application problems. | ***DEV 0025*** | AY 2015-16 | Formative and Summative Assessments; in-class and contextualized activities |  |
| Students will be able to simplify expressions involving fractions, decimals, signed numbers, and variables. Students will be able to solve basic linear equations and use geometric formulas to solve a variety of application problems. | ***DEV 0028*** | AY 2015-16 | Formative and Summative Assessments; in-class and contextualized activities |  |
| **Are changes planned as a result of the assessment of program outcomes? If so, what are those changes?**  |  |
| **How will you determine whether those changes had an impact?**  |  |

**Use of common exams/assignments/activities.**

Describe any common exams/assignments/activities that are the same across all sections of a course that are used in your department. Is data from these currently being collected and used for assessment purposes? Having at least a few common exams/assignment/activities across multiple sections of the same course can be an essential component of assessment of general education and program outcomes. If your department does not currently have any common exams/assignments/activities for assessment purposes, are there plans to develop any?

Since the last program review, the DMA has continued to employ common unit exams within the face-to-face courses, the math academy courses, and the online courses, which consist of proctored exams. The DMA has also continued to employ common final exams across the modalities as well. The DMA has also employed an item analysis to study and ensure the construct validity of our assessments as well. It is also noteworthy that the DMA utilizes common ancillary material (quizzes, homework assignments, practice tests) across all courses as well.

**Section II: Overview of Department**

1. **Mission of the department and its programs(s)**

What is the purpose of the department and its programs? What publics does the department serve through its instructional programs? What positive changes in students, the community and/or disciplines/professions is the department striving to effect?

The purpose of this department is to help students develop the basic skills that are required for them to be successful in their college credit bearing math courses. This department serves underprepared community college students who are seeking to complete a degree or certificate. DMA offers a variety of teaching modalities such as face-to-face instruction, self-paced math academy, online instructions, and boot camps to provide students with the required skills for their college-level math courses. Furthermore, through the utilization of embedded contextualization, students gain an understanding of how math is used in everyday life and in their potential career fields.

1. **Description of the self-study process**

Briefly describe the process the department followed to examine its status and prepare for this review. What were the strengths of the process, and what would the department do differently in its next five-year review**?**

Each of the DMA fulltime faculty members had an opportunity to contribute to the self study. Furthermore, DMA faculty members had the opportunity to reflect on their individual and the department’s accomplishments since the last review when completing the self study.

**Section III: Overview of Program**

1. **Analysis of environmental factors**

This analysis, initially developed in a collaborative meeting between the Director of Curriculum and Assessment and the department chairperson, provides important background on the environmental factors surrounding the program. Department chairpersons and faculty members have an opportunity to revise and refine the analysis as part of the self-study process.

How well is the department responding to the (1) current and (2) emerging needs of the community? The college?

There is a consistent and ongoing need for developmental math classes. DMA responds to this need by staffing enough developmental math classes each term based on those current needs. This includes adding or unpending sections as needed as the term approaches.

The DMA ensures quality instruction for students by the implementation of rigorous screening process for potential adjunct candidates. Potential candidates undergo thorough background checks as well as a meticulous interview process, which consists of standard questions and a short teaching demonstration, to determine their eligibility.

1. **Admission requirements**

Do any of the programs in your department have admissions requirements?

\_\_\_\_\_\_\_\_ Yes \_\_\_\_\_x\_\_\_ No

If yes, list any admission requirements specific to the department/program. How well have these requirements served the goals of the department/program? Are any changes in these requirements anticipated? If so, what is the rationale for these changes?

**Section IV: Department Quality**

1. **Evidence of student demand for the program**

How has/is student demand for the program changing? Why? Should the department take steps to increase the demand? Decrease the demand? Eliminate the program? What is the likely future demand for this program and why?

The demand for developmental education has remained steady as many students continue to enter community college underprepared for college-level courses. Consequently, our FTEs have remained steady. For example, the cumulative FTE for DMA for the 2013- 2014 AY was 1278, and the cumulative FTE for the 2014-2015 AY was 1185. Furthermore, from the Fall of 2012 through the Summer of 2015, a total of 17,366 students placed into developmental mathematics at Sinclair Community College. That is a total of 64.6% of incoming students during that time. There have been various initiatives, such as allowing students to enter college-level courses based on ACT scores, which have been put in place to reduce the number of incoming students placed into DMA. Additionally, the state of Florida has implemented initiatives to eliminate the requirement of developmental education and allow students to complete their developmental education requirements while enrolling in college-level courses. However, early results from the state of Florida have not been favorable. Students who are enrolling in college-level math courses are less prepared (Mangan, 2015). Therefore, we can conclude that there will always be a residual need for developmental math.

1. **Evidence of program quality from external sources (e.g., advisory committees, accrediting agencies, etc.)**

What evidence does the department have about evaluations or perceptions of department/program quality from sources outside the department? In addition to off-campus sources, include perceptions of quality by other departments/programs on campus where those departments are consumers of the instruction offered by the department.

Please see the following testimonial from Karl Hess, math department chair, regarding DMA. Again, the main purpose of DMA is to prepare students for their introductory math department courses:

“The Developmental Math Department is a valued partner of the Math Department.  Ever since the creation of the DMA Department, we have found it very easy to work with them to improve the flow of the curriculum between the two departments.  They worked with us to re-organize DEV 0022, DEV 0024, and DEV 0026 into two classes.  One of the new classes DEV (0028) serves as a prerequisite for MAT 1270 and MAT 1340, and the other (DEV 0025) serves as a prerequisite for MAT 1110, MAT 1120, and MAT 1130.  In effect, they created faster pathways into some of the Math Department's highest enrollment classes, as well as into the new Quantway pathway.  Now, they are working with us to integrate MAT 1270 into their highly successful Math Academy, which will help even more students accelerate through remedial courses.  They are always open to new ideas, easy to work with, and they do an excellent job of preparing their students for our classes.”--Karl Hess, Chair, Math Department

Does your department have any departmental accreditations or other form of external review?

\_\_\_\_\_\_\_\_ Yes \_\_\_\_x\_\_\_\_ No

If yes, please briefly summarize any commendations or recommendations from your most recent accreditation or external review. Note any issues that the external review organization indicated need to be resolved.

1. **Evidence of the placement/transfer of graduates**

What evidence does the department/program have regarding the extent to which its students transfer to other institutions? What evidence does the department have regarding the rate of employment of its graduates? What data is available regarding the performance of graduates who have transferred and/or become employed? What data is available from RAR graduate surveys?

Many students who enroll in a DMA class have not even started their program of study. Consequently, when considering longitudinal data with regard to transferring, graduation, and employment, there are too many contributing variables that affect validity. Therefore, these questions are not applicable to DMA. This conclusion was approved by the Provost’s Office.

1. **Evidence of the cost-effectiveness of the department/program**

What is the department doing to manage costs? What additional efforts could be made to control costs? What factors drive the costs for the department, and how does that influence how resources are allocated? What has the Average Class Size been for the department since the last Program Review, and what are steps that the department could take to increase Average Class Size? Has the department experienced any challenges in following the Two-Year Course Planning Guide?

The factors that drive the costs within the department are FTEs. Our DMA FTE total remains one of the highest at Sinclair. During the 2015-2016 AY, the DMA compressed our required course-sequence from four to three courses. Consequently, the department reduced the number of sections offered by 33% in the Fall of 2015. Reducing the number of sections offered has allowed the DMA to be more efficient with average class size, which in turn allows the college to be more cost effective. Since our last program review, our average class size has increased from 17.5 in the fall of 2012 to 21.5 in the Fall of 2015. The DMA has also demonstrated fiscal responsibility by stacking at least two sections in the Match Academy on the main campus as well as the satellite campuses. This format preserves space, and it reduces the cost of instruction as one instructor and one professional tutor are responsible for up to 44 students.

**Section V: Department/Program Status and Goals**

1. **List the department’s/program’s strengths, weaknesses, opportunities, and threats (SWOT analysis).**

Strengths:

* DMA Curriculum design is solid and uniform across all courses and modalities.
* DMA Curriculum spirals content within the units and into the subsequent courses so that students develop a deep conceptual understanding of topics.
* DMA Curriculum addresses the requirements of the introductory level MAT courses.
* DMA employs the use of common materials (lecture notes, homework assignments, quizzes, exams, syllabi, course outlines) by all DMA faculty.
* Grading procedures and requirements are common across courses and modalities.
* DMA embeds contextualization on all courses so that students understand the connection of math to real-world applications.
* DMA employs common exit assessments across all modalities.
* DMA employs consistent assessment (both quantitative and qualitative) to determine construct validity of our instruments and other various practices.
* DMA faculty employ a wide variety of learning modalities (face-to-face instruction, Math Academy, Boot Camps, distance learning) as well as an array of pedagogical practices to reach students.
* All DMA full-time faculty have taught for the Math Department. Our instructors’ willingness to take on these additional teaching assignments have allowed the DMA to gain a deeper understanding of preparing students as they transfer from the DMA to the Math Department.

 Weaknesses:

* Poor attendance, poor work ethic among the students, lack of motivation as well as contending with external issues often lead to non-success for DMA students.

 Opportunities:

* The DMA will continue to deepen the pool of contextualized activities in face-to-face courses so that students gain a deeper understanding of how math relates to the real world and their future career paths.
* In our face-to-face courses, we will continue to study and share effective pedagogical strategies.
* At times, there is a very short turnaround period between A and B term. This is especially the case during Fall Semester. The DMA looks to further strengthen the lines of communication between instructors, students, and advisors so that students are properly placed in their B term class, based on their results from A term.

 Threats:

* At times, students enroll in an inappropriate course or modality (i.e. boot camps). In actuality, the misplacement of students costs the student time and money because they often have to repeat the course two or three times before mastering the material when if they had taken the previous course or appropriate modality to begin with, they may not have had to repeat any course at all.
* Over the past decade, the entire discipline of developmental education has come under scrutiny on a national level. This has led to some sweeping changes and uncertainty regarding the future of the discipline. New and innovative changes are always important; however, if the discipline is in a constant state of flux, it can be difficult to appropriately assess which practices are effective or ineffective.
* Given the consistently high FTEs, staffing classes with qualified adjunct instructors remains a challenge. For the Fall of 2015, DMA had nine full-time faculty and 42 adjuncts. More specifically, adjuncts covered 65.3% of the total payload hours.
* There are too many demands to “tailor” the curriculum to specific career fields (i.e. SME careers vs. Allied Health careers) when the content must be mastered in a general context.
* There are, at times, unrealistic student expectations that they can begin courses late into the term. For example, some students may attempt to begin a DMA course well after the second week of the term. Since they miss so much content, this sets the student up for failure.

1. **List noteworthy innovations in instruction, curriculum and student learning over the last five years (including student awards, faculty awards, etc.).**
* Reduction of the total number of DMA courses from four to three to allow students to progress through their developmental math sequence at a quicker rate.
* The DMA has engineered alignment with the math department in that DMA employs the use of MyMathLab and the overall curriculum is aligned with and feeds into the math department courses.
* The DMA employs common materials (lecture notes, homework assignments, quizzes, exams, syllabi, course outlines) within each modality.
* The DMA have employed common exit assessments and grading requirements across courses and modalities.
* Using the Fly Wheel Concept (Collins, 2001), an effective theory that stresses setting a goal and staying on course, the DMA has been able to strengthen and solidify the Math Academy. More specifically, our department focused on the basic goal of making the Math Academy a solid modality for student learning. In addition to developing effective academic policies for students, the DMA has collected data from Math Academy assessments (both online and paper and pencil) and used those data to make necessary modifications.
* The DMA have developed and employed contextualized and group activities that incorporate math skills into everyday life (i.e. changing recipe quantities, geometry activity, and estimation activity).
* The DMA have represented Sinclair with faculty attending and presenting at regional and national conferences such as OhioMATYC (Mathematics Association of Two-Year Colleges), OADE (Ohio Association of Developmental Education), and NADE (National Association of Developmental Education).

1. **What are the department’s/program’s goals and rationale for expanding and improving student learning, including new courses, programs, delivery formats and locations? Please note that the department goals listed in this section will be reviewed for progress on Annual Updates and in your next Program Review.**

* We have compressed our 4 courses back into 3 courses in hopes of getting students through the DEV Math sequence quicker. In our face-to-face courses, we have embedded contextualization to give students a better understanding of how math applies to real-life situations. We have also implemented online assignments using MyMathLab so that we are better aligned with the math department. We will continue to evaluate our data from this redesign and make necessary modifications.
* We feel it is imperative to continue to offer a balance of face-to-face, math academy, distance learning sections, and boot camps as a way to address our heterogeneous student population and their diverse needs.
* We will continue to deepen our pool of contextualized activities in our face-to-face courses so that students can develop a deeper understanding of real-life mathematical concepts.
* We will be working with the math department to integrate MAT 1270 into the math academy. This will reduce potential time gaps for students who finish DEV 0028 early and will give students the opportunity to complete their MAT 1270 requirements at a quicker pace.
* The DMA faculty will become more familiar with the Sinclair Colleague Systems so that instructors can better advise students with regard to placement and mapping.
* We will continue to improve collaborations and interactions with other departments, especially the math department, to ensure that our content prepares students for the courses in these departments.
* We will continue to offer the DEV math courses at the main campus as well as at all of the satellite locations.

1. **What resources and other assistance are needed to accomplish the department’s/program’s goals?**
* So that we can accurately assess our redesign, the DMA feels that it is imperative to avoid any major redesign with our existing courses (DEV 0020, DEV 0025, and DEV 0028) in the immediate future, unless there are mandates from the state or federal government. If there is too much change and the curriculum is in a constant state of flux, we cannot determine which variables are effective. This also places our instructors in a constant learning curve. This in turn hinders serving our students.
* Based on our the results of our redesign, the DMA feels that it may be imperative to change the cut-off scores for the incoming placement test so that our students are better placed so they can be more successful.
* It is salient that we maintain and hire high-quality, well-qualified faculty (both full-time and adjunct) who are dedicated in teaching developmental math courses.
* For DMA to continue to function efficiently, it is imperative to get continued support (math academy coordinator, competent professional tutors).

**Section VI: Appendices: Supporting Documentation**