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| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date… **Department Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **COPE Chair (if applicable)** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date… **Department Chair:** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **General Education Committee Chair (If applicable)** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date… **College Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Undergraduate Curriculum Council Chair** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date… **College Dean** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Graduate Curriculum Committee Chair** |
|  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Vice Chancellor for Academic Affairs** |

**1.Contact Person** (Name, Email Address, Phone Number)

Dr. Debra Ingram, Chair

Department of Mathematics and Statistics

[dingram@astate.edu](mailto:dingram@astate.edu)

680-8166

**2.Proposed Change**

On Dr. Cooksey’s recommendation, the Department of Mathematics and Statistics is increasing the Math ACT score by two points for all MATH courses that use the Math ACT score for placement or as a prerequisite. This change brings A-State in line with two-year and four-year institutions in Arkansas that have already raised their Math ACT cutoffs. For example, all of the ASU two-year schools have already increased the Math ACT cutoff for College Algebra from 19 (the state minimum) to 21.

The complete list of affected courses is provided below. The exact changes to the prerequisite statements in the bulletin are provided in the Bulletin Changes section.

MATH 1023, College Algebra – prerequisite change from Math ACT score of 19 or above to Math ACT score of 21 or above

MATH 1033, Trigonometry – prerequisite change from Math ACT score of 19 or above to Math ACT score of 21 or above

MATH 1043, Quantitative Reasoning – no change per Dr. Cooksey

MATH 1054, Precalculus – prerequisite change from Math ACT score of 22 or above to Math ACT score of 24 or above

MATH 2143, Business Calculus – prerequisite change from Math ACT score of 24 or above to Math ACT score of 26 or above

MATH 2194, Survey of Calculus – prerequisite change from Math ACT score of 24 or above to Math ACT score of 26 or above

MATH 2204, Calculus I – prerequisite change from Math ACT score of 24 or above to Math ACT score of 26 or above

**3.Effective Date *(in time for Fall 2016 registration)***

4/1/2016

**4.Justification –** *Please provide details as to why this change is necessary.*

On Dr. Cooksey’s recommendation, the Department of Mathematics and Statistics is increasing the Math ACT score by two points for all MATH courses that use the Math ACT score for placement or as a prerequisite. This change brings A-State in line with two-year and four-year institutions in Arkansas that have already raised their Math ACT cutoffs. For example, all of the ASU two-year schools have already increased the Math ACT cutoff for College Algebra from 19 (the state minimum) to 21.

To estimate the impact on enrollment, the Office of Institutional Research and Planning provided data on:

* the number of students with 19-20 ACT Math scores enrolled in College Algebra during Fall 2014 and Fall 2015
* the number of students with 22 or 23 ACT Math scores enrolled in Precalculus during Fall 2014 and Fall 2015
* the number of students with 24 or 25 ACT Math scores enrolled in Calculus I during Fall 2014 and Fall 2015

**College Algebra:** The largest impact on enrollment is for College Algebra. We estimate approximately 120 incoming freshmen with an ACT Math score of 19-20 for Fall 2016. Increasing the Math ACT cutoff from 19 to 21 for College Algebra means these 120 students will not satisfy the prerequisite for College Algebra. To avoid delaying these students’ entrance into credit-bearing mathematics courses, the Department of Mathematics and Statistics will apply Complete College America’s Corequisite Remediation model (<http://completecollege.org/tag/corequisite-remediation/>) and advise these students to enroll in our SLA-supported sections of College Algebra. These sections require an additional 2.5 contact hours per week during which students receive structured learning assistance that provides learning support and remediates study behaviors that put students at risk. Three sections of 40 students will be offered during Fall 2016. Students who do not want to take an SLA-supported section of College Algebra will take UC 0173, Developmental Mathematics I. Dr. Jill Simons, Dean of University College, and Paula Bradberry, Director of First Year Studies, are collaborating with the Department of Mathematics and Statistics for advising incoming freshmen with Math ACT scores of 19-20 of their options during New Student Registration.

For College Algebra, the prerequisite change from 19 to 21 Math ACT implies a corresponding increase in Algebra COMPASS score from 41 to 47. We are also taking this opportunity to update the part of the prerequisite string that deals with Developmental Mathematics. Students who take Developmental Mathematics to satisfy the College Algebra prerequisite used to complete 12 modules; however, the number of modules is now nine and the bulletin change reflects this new number.

**Precalculus:** The number of students who would have been enrolled in Precalculus during Fall 2016 who will need to start in College Algebra instead is estimated to be 30. These students can be ready to enroll in Calculus I during Spring 2017 by taking both MATH 1023-College Algebra and MATH 1033-Trigonometry during Fall 2016.

**Calculus I:** The number of students who would have been enrolled in Calculus I during Fall 2016 who will need to start in Precalculus instead is estimated to be 50.

**Survey of Calculus and Business Calculus:** Most students enrolled in Survey of Calculus and Business Calculus satisfy the prerequisite by taking College Algebra instead of using a Math ACT score; therefore, the impact on enrollment will be small.

**Trigonometry:** The impact of increasing the Math ACT score for Trigonometry will be very small. The prerequisite string for Trigonometry allows any student enrolled in College Algebra to also enroll in Trigonometry. Since Trigonometry does not satisfy the mathematics general education requirement, students enroll in Trigonometry either after completing their general education mathematics course or during the same semester they are enrolled in their general education mathematics course. Students rarely take Trigonometry as their first college course in mathematics.

**Bulletin Changes**

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| **Instructions** |
| **Please visit** [**http://www.astate.edu/a/registrar/students/bulletins/index.dot**](http://www.astate.edu/a/registrar/students/bulletins/index.dot) **and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.**  **\*Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.**  - Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)  - New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).  - Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)  *You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the ‘format painter’ icon 🡪 , and selecting the text you would like to apply the change to.*  *Please visit* [*https://youtu.be/yjdL2n4lZm4*](https://youtu.be/yjdL2n4lZm4) *for more detailed instructions.* |

**MATH 1023. College Algebra** Equations and inequalities, functions and graphs, polynomial and rational functions, exponential and logarithmic functions, systems of equations and inequalities, matrices, and miscellaneous topics. No credit given if taken following MATH 1054. Prerequisite, High School Algebra II and score of ~~19~~ 21 or above on ACT Math or ~~460~~ 530 or above on SAT Math~~ematics~~ or ~~41~~ 47 or above on COMPASS Algebra ~~or 42 or above on ASSET Algebra~~ or a grade of C or better in MATH 0013 or completion of ~~12~~ 9 modules in UC 0173 and UC 022V. Fall, Spring, Summer. ~~Fall, Spring, Summer~~. (ACTS#: MATH 1103)

**MATH 1033. Plane Trigonometry** Right triangles and similar triangles, trigonometric ratios, degrees, and radians, trigonometric functions, circular functions, trigonometric identities, inverse trigonometric functions, trigonometric equations, Law of Sines, Law of Cosines, vectors, polar coordinates, and complex numbers. No credit given if taken following MATH 1054. Prerequisite, High School Algebra II and score of ~~19~~ 21or above on Math ACT or ~~590~~ 530 or above on Math SAT, or a grade of C or better in MATH 0013 or completion of 9 modules in UC 0173 and UC 022V or Corequisite, MATH 1023. Fall, Spring, Summer. (ACTS#: MATH 1203)

**MATH 1054. Precalculus Mathematics** Selected topics from algebra, trigonometry, and analytic geometry. Prerequisite, High School Algebra II and score of ~~22~~ 24 or above on Math ACT, or ~~630~~ 590 or above on Math SAT, or MATH 1023. Fall, Spring, Summer. (ACTS#: MATH 1305)

**MATH 2143. Business Calculus** Exponential functions, mathematics of finance, systems of linear equations, linear inequalities and linear programming, limits, derivatives, and integrals, business calculus applications including marginal analysis, extrema and concavity of functions of one and several variables. Will not satisfy requirements for mathematics degrees. Prerequisite, MATH 1023 or MATH 1054 or a Math ACT score of ~~24~~ 26 or a~~n~~ Math SAT score of ~~660~~ 650. Fall, Spring, Summer.

**MATH 2194. Survey of Calculus** Survey of the basic concepts of calculus, including limits, deriva­tives, exponential and logarithmic functions, integrals, and series and sequences. Credit will not be given for both MATH 2194 and MATH 2204. Prerequisites, MATH 1023 or MATH 1054 or a Math ACT score of 26 or a Math SAT score of 650. Fall, Spring. (ACTS#: MATH 2203)

**MATH 2204. Calculus I** Limits, derivatives, implicit differentiation, applications of the derivative, indefinite integrals, definite integrals, substitution techniques for integrals and applications of the integral. Prerequisites, High School Trigonometry and score of ~~24~~ 26 or above on math ACT, or ~~660~~ 650 or above on Math SAT, or MATH 1023 and MATH 1033, or MATH 1054. Fall, Spring, Summer. (ACTS#: MATH 2405)