

UNDERGRADUATE CURRICULUM PROPOSAL COVER SHEET

Title of Proposal – Must begin with Department Abbreviation:

MATH 131, 144, and 215: Lower Minimum Mathematics ACT prerequisite from 24 to 22

Check One: Full Proposal or Information Item

Effective Date for Curricular Offering: August 2010

FROM: Edward Rozema, Mathematics, EMCS 415B, 423-4584 or 423-4545, edward-rozema@utc.edu
(proposal originator: include spokesperson's name, department, office number, telephone, e-mail)

Does this require new resources from the originating department or other department? No
Please include an explanation if yes.

Faculty of the originating department approved this proposal on October 9, 2009 (date),
by a vote of 23 aye votes; 5 nay votes; 1 abstentions; 4 eligible voting members absent.

The following have examined this proposal:

Dept Head/Director: John Graef John P. Graef 10/9/09 ✓
Printed name Signature, date Approve Neutral Disapprove*

College Curriculum Committee Date: _____ **Vote:** _____ **Signature of Chair:** _____

Spokespersons for Affected Departments:

Printed Name, Department	Signature, Date	Approve	Neutral	Disapprove*
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Dean/Director: H. Burkham H. Burkham _____
Printed name Signature, date Comments

University Registrar: Linda Orth Linda Orth _____
Printed name Signature, date Comments

Provost/Representative: _____
Printed name Signature, date Approve Neutral Disapprove*

Lab/studio fee requested:
Provost: Phil Oldham Phil Oldham ✓
Printed name Signature, date Approve Disapprove*

*Those who disapprove may attach an explanation

ACTIONS on this proposal:	Curriculum Committee	Faculty Senate
Date the proposal was considered	_____	_____
Vote of the body:	_____	_____
Accepted as information item (indicate date)	_____	_____
Approved as submitted (indicate date)	_____	_____
Approved with amendments (amendments indicated and transmitted to all signatories above, date):	_____	_____
Signature of Chair:	_____	_____

To: Curriculum Committee (Undergraduate)
From: Department of Mathematics
Re: ACT Prerequisites for Math 131, 144, and 215
Date: October 23, 2009

Proposal: Change the Math ACT prerequisite on Math 131, 144, and 215 from a minimum of 24 to a minimum of 22 (the corresponding Math SAT would drop from 560 to 520). Any student with a Math ACT less than 22 will be required to take the Mathematics Placement Test unless the student has already passed a college level or developmental mathematics course.

Background: The current prerequisites on Math 131, 144, and 215 are identical: "UTC Math Placement Level 20 or Mathematics 106 with minimum grade of C or Math ACT 24 or above." For Math 123 and 210, the prerequisites are the same except that the Math ACT is 22 or above. When this system was put in place a few years ago, we intended to monitor how well the process was working. We feel that the placement system should be judged by how well students do as first time freshman. As time passes, the students will begin to forget more mathematics and the placement system will become less robust. To this end, we obtained data from Institutional Research on students entering UTC for the first time in Fall 2008, perhaps as transfers. We eliminated students who had taken a previous math course, including developmental math and the UTC Step Ahead program (an intensive review of the topics in Math 106 during the week before classes begin for some students placing in Math 106). Students without an ACT score were also ignored. The resulting set of students consisted mainly of first time freshman. They will be referred to as "entering students" below.

Students receiving an A, B, or C were considered successful. The success rate may be computed either with or without W grades. Both are given below; the rate with W is followed by the rate without W in parentheses. The ACT organization states that in College Algebra first-year students scoring a Math ACT of 22 or above have a 50 percent chance of obtaining a B and a 75 percent chance of obtaining a C. The report does not say how withdrawals were handled nor does it give an indication of how many students with high ACT scores were included. For example, at UTC students with a Math ACT of 26 or above may take Math 136 or Math 145 and those with a Math ACT of 28 or above may take Math 151/152, but none of them are required to do so. The choices these more qualified students make would presumably have an effect on the success rates in College Algebra.

Summary of the Data: Of the entering students described above, 335 were enrolled in Math 131, 72 in Math 144, and 18 in Math 215.

Math 215. Only one of these 18 students had an ACT of 22 or 23 while there were three students with an ACT above 23. The other fourteen students had an ACT less than 22 (and, perforce, Mathematics Placement Level of 20 or higher). According to data from Institutional Research, since Fall 2005, 105 entering students took Math 215. Of these, four students had an ACT of 22 or 23 and Level less than 20; they all took Math 106 prior to Math 215 and succeeded in both courses. These four students would have been affected by the proposal. It appears that changing the ACT score will have little effect on Math 215. (Of course, it is not known how many entering students would have taken Math 215 if they had succeeded in Math 106.)

Math 144. Only 11 students of the 72 entering students in Math 144 had an ACT of 22 or 23. Their success rate was 55% (75%). There were 37 students with an ACT of 24 or higher. Their success rate was 59% (85%). They did better than those with an ACT of 22 or 23, but not by much.

Math 131. There were 56 students with an ACT of 22 or 23 (out of 335 entering students). The success rate was 68% (76%). There were 164 students with an ACT of 24 or higher. Their success rate was 73% (84%). They did better than those with ACT = 22 or 23, but not by much.

In order to obtain a comparison with ACT's recommendation of an ACT of 22 or better, we may combine the results for students in Math 131 and 144 with an ACT of 22 or better. The success rate was $186/268 = 69\%$ ($186/227 = 82\%$). This compares to ACT's claim that the success rate for College Algebra is 75%. The AB rate was $126/268 = 47\%$ ($126/227 = 55\%$) which compares to ACT's claim of 50%.

There were 32 entering students with an ACT of 22 or 23 who enrolled in Math 106. These students would no longer need Math 106 if this proposal passes.

Should we drop the Mathematics Placement Test (MPT) and rely on the ACT alone? There were 152 entering students in Math 131, 144, or 215 who had a Math ACT less than 22 and a placement score of 20 or higher. The success rate was 49% (65%). Although somewhat low, dropping the MPT would have forced 74 students to take Math 106 who did not need it. We propose that any student with a Math ACT less than 22 should be required to take the MPT unless the student has already passed in a college level or developmental mathematics course.

Table 1. Any entering student with a Math ACT less than 24 would have had a Math Placement Level of 20 or higher.

Course (Fall 2008)	Math ACT	Total	ABC/ABCDFW	ABC/ABCDF
Math 131	16 – 21	115	48%	64%
	22 – 23	56	68%	76%
	24 – 31	164	73%	84%
	Entering Students	335	64%	76%
	All 131 Students	740	54%	62%
Math 144	16 – 21	23	48%	69%
	22 – 23	11	55%	75%
	24 – 30	37	59%	85%
	Entering Students	72	56%	80%
	All 144 Students	131	42%	58%
Math 215	16 – 21	14	57%	73%
	22 – 23	1	0%	0%
	24 – 25	3	100%	100%
	Entering Students	18	61%	73%
	All 215 Students	80	59%	72%
All three	16 – 21	152	49%	65%
	22 – 23	68	66%	76%
	24 – 31	204	71%	84%
	Entering Students	425	62%	77%
	All Students	951	53%	62%

Table 2. Success rates in Math 123 and 210 (combined since there were few entering students in Math 210).

Courses (Fall 2008)	Math ACT	Total	ABC/ABCDFW	ABC/ABCDF
Math 123 and 210	16 – 21	26	62%	76%
	22 – 23	35	57%	67%
	24 – 33	58	72%	81%
	Entering Students	119	66%	76%
	All 123/210 Students	613	62%	72%