

University of Georgia
2010 College BASE Results

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The College BASE

The College BASE is a criterion-referenced academic achievement examination that assesses students' knowledge and skills in the subject areas of English, social studies, science, and mathematics, as well as their performance in certain higher order thinking skills (interpretive reasoning, strategic reasoning, and adaptive reasoning) that are meant to be learned in the first two years of undergraduate study. The knowledge and skills tested align well with general education competencies and outcomes defined for UGA students in the pre-2008 Core Curriculum areas of Essential Skills; Humanities/Fine Arts; Science Mathematics, and Technology; and Social Sciences. Students are typically tested after completion of a college-level core curriculum. The standard 180-item multiple-choice instrument comprises one test in each of the four subject areas. There is an optional essay writing exercise. The Assessment Resource Center (ARC)¹ gives campuses the option to use the full assessment with individual students, or to administer one subject test (35-56 items per test) each to a larger number of students. In this case, the ARC provides guidance for sample selection to achieve sufficiently representative numbers. This method saves time, and is typically more feasible for student and institutional schedules.²

UGA 2010 Test Administration

During March and April 2010, 626 UGA undergraduate students participated in College BASE testing. UGA assessment staff from the Office of Academic Planning administered the

¹ The Assessment Resource Center (ARC) developed and administers the College BASE. The ARC is located in the College of Education at the University of Missouri—Columbia.

² For more information, consult *College BASE brochure*. Assessment Resource Center, University of Missouri—Columbia. Retrieved June 29, 2010, from http://arc.missouri.edu/index.php?p=/CB/CBMO/CBin-outMO_BrocOF.htm

standard test form in twelve upper-division courses representing ten majors (Philosophy, Animal and Dairy Science, Spanish, Accounting, Biochemistry and Molecular Biology, Ecology, International Affairs, Microbiology, Health Promotion and Education, and Telecommunications).³ Participants were given 45 minutes to complete one paper and pencil subject test in English, social studies, science, or mathematics. Subject tests were assigned randomly to participants, and were evenly distributed; of the 626 completed subject tests, 159 were in English, 160 mathematics, 153 science, and 155 social studies (one student completed two tests during the testing period, adding to 627 tests for 626 students). Students were not required to complete the writing exercise. The majority of participants were juniors (n = 257) or seniors (n = 164). Some sophomores (n = 78) and freshmen (n = 2) participated, while the remainder (n = 125) did not report their class standing.

Results and Analysis

The Assessment Resource Center scored the tests in spring 2010, and sent the results to UGA in the form of an institutional summary report. The report identifies strengths and weaknesses of UGA students as a group in terms of general education knowledge and skills. Scores in each subject area are provided in aggregate form. The institutional summary report provides means and standard deviations for each subject area. Scores in each subject area are further delineated in terms of content and competency. Skill scores for the subject area are divided into high (H), medium (M), and low (L), showing the number and percentage of students who performed at each of the competency levels. Cluster scores represent a grouping of competencies in each subject area.

³ Students enrolled in these courses were not required to participate, and a small number opted not to take the test. In a few cases, students who were enrolled in more than one of the participating courses, and had already completed one test were excused from the second testing session.

The composite, subject, and cluster scores are reported on a scale from 40 to 560, with 300 as the constant mean and standard deviation of 65 points. Each institution has a different mean and standard deviation, and can use the constant mean and standard deviation as a comparison measure. The report displays the mean score and standard deviation for the UGA students who completed the test this year. To identify the institution’s strengths and weaknesses, compare the composite score to the subject and cluster scores. According to the *College BASE Interpretive Guidelines*, a difference of 17 points among the scores can be considered “meaningful.”

The following table lists UGA student scores for four subject areas and the overall composite score:

TABLE 1: UGA Mean Scores on the 2010 College BASE

Subject	UGA Mean	UGA Standard Deviation
Composite Score	343	NA
English	320*	55
Mathematics	362*	60
Science	363*	53
Social Studies	324*	57

**Score is meaningful.*

UGA’s composite score of 343 is within one standard deviation of the exam’s constant mean of 300. This means that 68 percent of UGA students scored between 278 and 408, suggesting an overall strong performance by our students compared to all students who took the test this year. A comparison of aggregate subject scores to the composite score indicates relative strengths in mathematics (positive difference of 19 points from the composite score) and science (positive difference of 20 points), and relative weaknesses in English (negative difference of 23 points from the composite score) and social studies (negative difference of 19 points). It must be noted that while UGA students scored *relatively* less well in English and social studies compared

to the composite score, they still scored well above the national mean in all subject areas. Comparisons to similar institutions will be discussed later in this report. Subject scores are analyzed in more detail below.

Mathematics

UGA's mathematics score reports a mean score of 362, with a standard deviation of 60. This means that even going one standard deviation below the mean, (scores of 302 and higher) UGA participants scored well above the national mean. UGA students excelled in the competency category of General Mathematics, scoring an average 357 (s.d. = 46). Strengths are clearly in *properties and notations*, and *using statistics* cluster areas, with 69% and 66%, respectively, of UGA students scoring in the high category. UGA students do relatively well in *practical applications*, with 50% in the medium category, and 39% scoring high. The smaller standard deviation in general mathematics indicates a coherent pattern of relative performance among our students. UGA students performed relatively well in Algebra (m = 360; s.d. = 57), with the majority of students performing in the high or medium categories in *evaluating expressions* (H 46%; M 50%), and *equations & inequalities* (H 76%; M 42%) cluster areas. A relative weakness is indicated in Geometry, with an average score of 342, a score of 20 points below the mean for the overall mathematics category. The high standard deviation of 71 suggests a wider gap in student performance than in other math subjects. UGA students demonstrated particular difficulties with *geometrical calculations* (H 40%; M 46%, L 14%).

Science

UGA students performed particularly well in science. A mean score of 363 and standard deviation of 53 shows that 68 percent of our students earned scores between 310 and 416, well above the national mean. Students demonstrated particular relative strengths in *fundamental*

concepts (m = 355; s.d. = 44). Students performed less well in *laboratory fieldwork* (m = 350; s.d. = 52), especially in the area of *observation/experimental design* (H 44%; M 44%; L 11%). However, these scores do not represent meaningful differences, and should be considered with evidence from other sources regarding UGA performance in general education science knowledge and skills.

English

UGA students performed the least well in English, with a mean overall score of 320 (s.d. = 55), which is 23 points below the composite score. Participants demonstrated the most difficulty in the competency category of Reading & Literature, scoring an average of 316 (s.d. = 60). This means that 68 percent of our students scored between 256 and 376. Scores indicate particular difficulty in *reading critically* (H 31%; M 51%; L 18%), and *reading analytically* (H 29%; M 53%; L 18%) cluster areas. Students' relative performance was higher in *understanding literature* (H 40%; M 50%; L 10%). Although participants did not complete the writing exercise, the skills of *writing as a process* and *conventions of written English* were captured in the test. UGA students performed relatively well in this area, scoring an average 335 with a smaller standard deviation (s.d. = 45). This score is 8 points below the composite score, and thus not considered meaningful. However, it is worth noting that students largely performed in the high and medium categories in this competency area.

Social Studies

Social studies was also a relative weakness for UGA students. A significantly lower mean of 324 (s.d. = 57) indicates that improvement may be needed in this area. UGA students showed relative difficulties in both History (m = 320; s.d. = 49) and Social Sciences (m = 325; s. d. = 54)

competency areas, with primary challenges appearing to be in *significance of US events* (H 25%; M 62%; L 14%), and *geography* (H 28%; M 61%; L 11%) cluster areas.

UGA Comparison Summary (2003-2010)

The University of Georgia has participated in the College BASE examination three times: in 2003, 2007, and 2010. It may be useful to review changes in mean scores over the three testing years. The following table lists UGA mean scores from 2003, 2007, and 2010 administrations of the College BASE exam. Meaningful mean scores are indicated with an asterisk (*). Note that although composite scores have progressively increased, there are no significant differences in composite scores over the three test administrations. Geometry continues to be an area of relative challenge, as does the Reading and Literature competency.

TABLE 2: UGA Mean Scores on the 2003, 2007, and 2010 College BASE

Subject	Ability Cluster	2003	2007	2010
Composite Score		332	337	343
English		328	328	320*
	Reading & Literature	317	315*	316*
	Writing	331	333	335
Mathematics		331	325	362*
	General Math	325	344	357
	Algebra	340	338	360*
	Geometry	308*	297*	342*
Science		331	344	363*
	Lab & Field Work	332	335	350
	Fundamental Concepts	319	345	355
Social Studies		336	349	324*
	History	333	347	320*
	Social Sciences	331	340	324*

**Score is meaningful.*

Why might there be so many meaningful scores in 2010 in comparison to previous years? Are UGA students really showing relative improvement in math and science, while doing relatively worse in English and social studies? Readers should be cautioned against making this assumption without examining reliable evidence from other assessment sources. It is quite possible that test samples were either not representative of the UGA upper-division population,

and/or that the test samples were dissimilar in relation to each other. Although all UGA students complete the general education curriculum requirements, students are likely to choose majors that fit their particular strengths. If math and science majors were oversampled, or liberal arts majors were under sampled across the test administration years, scores are likely to favor those particular competencies. Unfortunately, information on students' majors at the time of test administration was not collected, so no conclusions can be made on this point. Again, it is crucial that multiple assessment sources be consulted before making conclusions about institutional performance.

Institutional Comparisons

The Assessment Resource Center provides a report on comparative/comparable institutions for the University of Georgia. Comparing UGA's mean scores with the aggregate scores for these institutions can be instructive, though care should be taken in making conclusions about UGA student performance based on these comparisons. The ARC does not provide clear criteria on how these comparative institutions were chosen, and thus the reader should exercise caution in considering using these institutions as a kind of benchmark.

Additionally, no information on sample demographics is provided. It should be noted that only one of these institutions—University of Missouri-Columbia—is on the UGA Comparator Institutions list, and none of the institutions are on UGA's list of aspirational peer institutions. Comparative scores are aggregated from all of the following ten institutions; individual institutional scores are not provided.

1. University of Alaska-Fairbanks
2. University of Hawaii-Manoa
3. Wichita State University
4. Jackson State University
5. St. Louis University
6. University of Missouri-Columbia

7. Missouri University of Science and Technology
8. University of Missouri-St. Louis
9. Washington University
10. University of North Texas

TABLE 3: Mean Scores for UGA and Comparative Institutions 2010 College BASE

Subject	Ability Cluster	UGA 2010	Comparative Institutions	Score Difference
Composite Score		343	284	59
English		320*	273	47
	Reading & Literature	316*	273	43
	Writing	335	282	53
Mathematics		362*	296	66^
	General Math	357	301*	56
	Algebra	360*	303*	57
	Geometry	342*	289	53
Science		363*	291	72^
	Lab & Field Work	350	294	56
	Fundamental Concepts	355	290	65^
Social Studies		324*	275	49
	History	320*	279	41
	Social Sciences	324*	280	44

**Score is meaningful. ^Score is different by at least one standard deviation (SD = 65).*

Note that UGA students scored significantly higher in the composite as well as the subject areas. In both mathematics and science, UGA students scored one standard deviation better than students in the comparative institutions. Additionally, UGA's scores reflect much higher percentages of students scoring in the high and medium levels, and very few scoring in the low level for competencies across the subject areas, as compared to students in the comparative institutions.

Use and Limitations

According to the Assessment Resource Center, the College BASE can be used for three main purposes: to compare to other institutions, as a longitudinal study of educational performance at an institution, and as a value-added measure of student learning. The College

BASE is a professionally developed, standardized test with established validity and reliability that allows UGA to make national comparisons. The use of standardized tests like College BASE also has limitations. One consideration in using the College BASE is that it is a criterion-referenced test, meaning that it assesses students' mastery of pre-determined knowledge sets. Standardized tests generally face the challenge of not matching up precisely with an individual institution's learning outcomes or curriculum (Allen, 2006). While the College BASE knowledge sets are generally aligned with the competencies defined for UGA's general education curriculum, as noted in the *2006-2007 College BASE Examination Results* report, UGA students select from a cafeteria-style general education curriculum rather than experiencing a common set of courses. Students' individual course taking patterns likely account for some variations in scores. For this reason, the College BASE results at UGA may serve best as an overall measure of student attainment across the general education curriculum rather than a precise measure for individual competencies. Multiple-choice tests are also not proficient at assessing complex forms of cognitive processing or reasoning, which UGA seeks for its students.

Particular limitations associated with administration of the College BASE on the UGA campus include difficulty in sample selection and adequate representation of the student body. Because funds for recruitment and participant motivation are limited, and such a large number of students must be tested, it is impossible to recruit a perfectly representative sample. Due to these challenges, test administration in scheduled courses was determined to be the most effective method. Every effort was made to recruit a diverse sample of upper-division courses across majors. However, as discussed previously, it is possible that some majors were over- or underrepresented in the participant samples. In addition, past test administrators faced the challenge of time constraints in the classroom (Aycock & Ruggless, 2007). We do not believe

this was the case in the 2010 administration, as care was taken to schedule courses with 75-minute class periods.

References

Allen, M. J. (2006). *Assessing general education programs*. San Francisco: Jossey-Bass.

Aycock, A. J., & Ruggless, D. J. (2007). *2006-2007 College BASE examination results*.

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