

## STUDENT EXPERIENCE IN THE RESEARCH UNIVERSITY (SERU) PROJECT

**CSHE** | Center for Studies in Higher Education  
UNIVERSITY OF CALIFORNIA, BERKELEY  
<http://cshe.berkeley.edu>

### SERU PROJECT TECHNICAL REPORT\*

## FACTOR STRUCTURE AND RELIABILITY OF THE 2011 SERU/UCUES QUESTIONNAIRE CORE

November 2011

Steve Chatman

University of California, Berkeley

*Copyright 2011 Steve Chatman, all rights reserved.*

---

This technical report summarizes the fourth independent factor analysis of the SERU/UCUES questionnaire responses of students with majors. The 2011 solution employed the same quantitative analysis used in the prior solutions -- varimax orthogonal rotation to determine principal components followed by promax oblique rotation to identify subfactors -- supplemented by collaborative judgment of a research team of researchers. The research team for this analysis was comprised of representatives from Michigan, Florida, Santa Cruz, and Berkeley.<sup>1</sup> The recommendations were reviewed and approved by the full complement of project liaisons.

### INTRODUCTION

Overall the four solutions have been remarkably similar. The most significant and substantive difference in factor structure was between 2006 and 2008 and was the result of several academic experience items being moved from a 2006 module to the core segment of the questionnaire. The most substantive differences from 2008 to 2009 were methodological: respondents from several AAU institutions were included, factor analysis was performed on a weighted random sample of University of California and participating AAU students, factor scores were computed using item loadings, and a reduced set of factor scores was computed for all students, whether they had declared majors or not. A review of the factor solution was scheduled for 2012 but was moved forward by factor score changes attributed to rearrangement of questionnaire items.

Changes from 2010 to 2011 were largely structural. The academic engagement section that included 20 items about involvement with faculty, small course taking, and instructional practices was moved to the start of the questionnaire to increase student interest and engagement in the survey. Percent of reading completed was also moved to that section. In addition, several items about behaviors that students might have taken to meet college costs were deleted from the list. Early analysis of 2011 results identified a uniform increase in student response to engagement items across all participating campuses that has been attributed to the structural change. That change in scores prompted this factor analysis and computation of revised factor scores.

This report displays the factor structure assignments recommended by the SERU workgroup: Anna Sher (UCSC), Karen Zaruba (Michigan), Craig Bowen (Florida), and me. As was the case with the first solution at UC Riverside when faculty, institutional researchers, and a graduate student met to produce a recommended solution for the Consortium, a group of volunteers conducted the analysis collectively. The assignment of items to principal components and then to subfactors, was typically very clearly indicated by loadings and the earlier solutions were largely confirmed. Placement by expert judgment has been very limited and that was again true for the current session for the large majority of items.

---

<sup>1</sup> Karen Zaruba of the University of Michigan, Anna Sher of UC Santa Cruz, Craig Bowen of the University of Florida and the author, Steve Chatman of CSHE at UC Berkeley.

Of the nine principal components, 1, 5, 8, and the Use of Time principal component remain unchanged. The principal component and subfactor structure of the relevant items was clear and confirmed. The changes recommended by the workgroup are limited to the conceptually linked principal component factors 2 and 4 (current skills and gains in skills), factor 3, factor 6 and factor 7. The recommended changes are described below and shown in red in factor and subfactor tables.

## RECOMMENDED CHANGES

Factor two is comprised of self-assessment ratings of current skills in a variety of nonquantitative areas. There were three changes recommended.

1. Drop the self-rating of interpersonal (social) skills. This item loaded weakly and the loadings were relatively undifferentiated and flat across the three subfactors. The workgroup did not recommend dropping the item from the questionnaire, only from this principal component.
2. Move presentation skills to the third subfactor with library and research skills. Not sure why this item was a part of subfactor 2a before but it psychometrically fit better with the third subfactor and the workgroup thought that it made more sense placed there anyway.
3. Change label for subfactor 2c to include presentation skills. With the move of presentation skills to 2c it seemed like the reasonable thing to do.

Factor three is comprised of items about active engagement with instruction, faculty, research and creative projects, and collaborative work with fellow students. There was one change recommended.

1. Move worked with faculty member on activity other than coursework to first subfactor. The loadings were not clearly differentiating and the nature of the interaction described is more similar to those of the first subfactor than the second in the workgroup's opinion. With the change, it is clear that the second subfactor is entirely about research and creative projects.

Factor 6 is Campus Climate for Diversity and includes freedom of expression. There was one set of recommended changes brought about by the inclusion of disability items and a poor fit by the previous three subfactors. The new item about students being respected regardless of their disabilities was added to this principal component. The data this year were better fit by a two factor solution and the two factor solution was easier to describe. Religion and politics now constitute one subfactor and all other dimensions: sex, social class, race/ethnicity, gender, and disabilities, constitute the first subfactor. Students respected regardless of political beliefs loaded on both subfactors similarly but was placed with the second subfactor, Freedom to Express Beliefs, for obvious reasons.

Another new item for 2011, time spent on community service, fit with the prior Factor 7 items, Academic Disengagement. As was the case in Factor 6, the bigger recommended change was prompted by a poorly fitting subfactor structure. When a four subfactor solution was tried instead, the fit was far clearer and better than the prior three subfactor solution and the tested two subfactor solution. The primary difference in the two and three subfactor solutions was that the two items about selecting a major because it was easy and allowed time for other activities constitute a clear new, fourth subfactor. There is another recommended change for Factor 7 but it pertains to computation and will be described subsequently.

## METHODOLOGY

### *Random Sample*

Factor analysis was performed on a simple random sample without replacement of students with declared majors weighted by institution. For the institutions in this project those weights were: Texas (8,616), Florida (7,731), Rutgers University (6,776), Michigan (5,875), Berkeley (5,617), Oregon (4,455), Pittsburgh (4,040), North Carolina (4,011), and the University of Southern California (3,910). The sample was about 47,000 in order to provide as large a response set as possible for each factor while correctly reflecting relative enrollments--the sample was weighted by the number of undergraduates at each institution.

### *Computing Individual Student Factor Scores*

The process of computing factor and subfactor scores for 2011 extends the methodology first used in 2009 and 2010. Briefly the steps used in computing a student's factor score include: (1) responses by item are standardized to adjust for item response option types, (2) the mean of items weighted by loadings is computed for the factor or subfactor if the student responded to at least half the items in that factor or subfactor, and (3) the resulting scores are standardized and reported on a scale with a mean of 5 and standard deviation of 2.

Because the loadings are decimal values between zero and one and standard scores have a mean of zero and standard deviation of one, large weights have little effect on the value while small weights tend to move standard scores toward the mean. For example, if a student's standard score on item 1 is 0.8 and the weight of item 1 is 0.9 then the contribution of item one to the factor score is little changed ( $0.8 \times 0.9 = 0.72$ ). If the weight is 0.3 then the contribution of item 1 has changed markedly ( $0.8 \times 0.3 = 0.24$ ) and is moved toward the mean of zero. Similarly, negative values are also moved toward the mean (e.g.  $-0.8 \times 0.3 = -0.24$ ).

Continuing the practice started in 2009, factor scores are computed for all students whether they had declared majors or not. It continues to be true that the primary use of SERU/UCUES factor scores is in academic program review, and therefore, the factor structure, loadings and standardization were based on students with declared majors. Because students without majors respond to a modified set of items, and some subfactor scores cannot be computed for them because of the reduced item set, researchers should use these scores with caution.

### *Reliability as Measured by Coefficient Alpha*

Internal consistency of factors as measured by Cronbach's coefficient alpha ranged from 0.92 for Satisfaction with Educational Experience (Factor 1) to 0.53 for Quantitative Professions (Factor 8) and all subfactor reliability estimates were higher than 0.43. As was true of the factor solution, all reliability estimates of factors and subfactors have been remarkably consistent over time. The reliability coefficients for the principal components and subfactors appear at the bottom of each factor table.

## **The Factors**

### *Factor 1: Satisfaction with Educational Experience*

Factor 1 is an exception to the rule that subfactors were formed by promax solution with oblique rotations. In fact, all items in Satisfaction with Educational Experience load heavily on one vector. The subscales offered for Factor 1 were created by the panel of experts developing the first solution for the 2006 data and reviewed by the campus liaisons (Chatman, 2007). The subfactor structure is supported by factor analysis but is equally driven by the desire to provide useful composite measures: instruction, availability, belonging, advising, etc. Again, the decisions were not psychometrically arbitrary and the items do tend to have high internal consistency. In many respects, they are akin to Pike's notion of scalets and the use of scalets in NSSE as "Benchmarks" (see Pike's discussion of scalets, 2006).

### *Factor 2 and Factor 4: Current Skills Self-Assessment (Nonquantitative) and Gains in Self-Assessment of Skills (Nonquantitative)*

The SERU/UCUES questionnaire uses many self-rating items that ask students to use a six-point scale to assess their skills both now and at entry to their campus. These values are used to compute a gain score, a strategy that has been shown to be more valid than asking students to assess gain directly using categories such as "very little" and "very much" (see discussion in Thomson & Douglass, 2009, pp 5-7). As mentioned previously, the 2009 solution found a new subfactor, Computer and Research Skills, which greatly improves the usefulness of Factor 2 scores. Items asking about Internet, computer, library research and other research skills now comprise a subfactor distinct from the more general skills of Critical Thinking and Communication. There were slight differences in subfactor composition between the current skills ratings (Factor 2) and gain scores (Factor 4) but they were judged by the 2007 panel (Chatman, 2007) to be of minor importance and certainly of lesser importance than the need to report parallel measures. Subfactor structures for Factors 2 and 4 have been made parallel since that time because the differences have continued to be slight.

### *Factor 3: Engagement with Studies*

Factor 3 is one of a few factor scores that are similar in meaning and composition to NSSE Benchmarks. It consists of three subfactors addressing academic involvement, initiative, research engagement, and collaborative work. Engagement with Studies is a factor that is of special interest to faculty as it helps to describe students that many faculty, especially in social sciences and humanities, find to be more challenging and engaging for them as faculty. The scores in Factor 3, like NSSE Benchmarks, tend to favor humanities and social sciences students and to penalize hard science and engineering students.

### *Factor 5: Development of Scholarship*

The majority of items in Factor 5 were constructed to reflect Benjamin Bloom's taxonomy of educational objectives (1956) and the items are arrayed from lower-order to higher-order thinking skills. Perhaps no other classification scheme has been as influential and continues to contribute to many educational fields (e.g., Zheng et al., 2008 on the content of AP Biology, undergraduate instruction, MCAT, and medical school). The subfactor structure for Factor 5 has been very consistent since its inception.

### *Factor 6: Campus Climate for Diversity*

Factor 6 appeared as part of the core factor structure in 2008 when eight items asking about respect for students and freedom for expression of beliefs and ideas were moved from a randomly assigned module to the universally assigned core item set. A new item in 2011 about respect for students regardless of their disabilities loaded along with other questions about respect regardless of student characteristics as the new first subfactor. The items about religious and political beliefs similarly held together as a second subfactor.

### *Factor 7: Academic Disengagement (Inverted Scale)<sup>2</sup>*

While the concept of Academic Disengagement is straightforward, computing and reporting of Academic Disengagement are more complicated. Skipping class, being unprepared, not reading material, partying, and watching TV are all examples of activities that will interfere with academic involvement whether or not they are associated with lower academic performance. A student exhibiting high levels of these behaviors has less time for academic matters. An area of special interest for future research is the presence of activities generally considered to be healthy for students on several levels: exercise, involvement in student clubs and organizations and recreational or creative interests and hobbies. Surprisingly, a new item about community service fell into this principal component but fit the more "healthy" subfactor along with student clubs, recreation and sports, and attending concerts, movies, etc.

### *Factor 8: Quantitative Professions*

From its full inception in 2006, the SERU/UCUES questionnaire has been atypical because it has items that better reflect the undergraduate experience of science, business and engineering students. The subfactors are ratings of quantitative skills, both current and gain, and reasons for selecting a major that are reward driven: socially, personally and monetarily.

### *Factor 9: Time Factor*

The items of Factor 9 have never been part of factor solutions. They are items that the first panel, in 2006, judged to be especially important to universities and that needed to be formed according to university interest in student employment and academic time.

## References

- B. S. Bloom (Ed.), *Taxonomy of Educational Objectives: The Classification of Educational Goals, Handbook I: Cognitive Domain* (David McKay, New York 1956).
- Chatman, S. P. (2007). A Common Factor Solution for UCUES 2006 Upper-Division Core Items (JAD 5.11.07). Center for Studies in Higher Education. Berkeley, CA. [cshe.berkeley.edu/research/seru/papers/SERU.TechR.FactorAnalysis1.6.20.pdf](http://cshe.berkeley.edu/research/seru/papers/SERU.TechR.FactorAnalysis1.6.20.pdf)
- Pike, G. R. (2006). The convergent and discriminant validity of NSSE scalet scores. *Journal of College Student Development*, 47, 550-563.
- Thomson, G. & Douglass, J.A. (2009). Decoding Learning Gains: Measuring Outcomes and the Pivotal Role of the Major and Student Backgrounds. Research and Occasional Paper Series: CSHE.5.09. Center for Studies in Higher Education. Berkeley, CA. <http://cshe.berkeley.edu/publications/docs/ROPS-GT-JD-Decoding-5-30-09.pdf>
- Zheng, A.Y., Lawhorn, J.K., Lumley, T., and Freeman, S. (2008). Application of Bloom's Taxonomy Debunks the "MCAT Myth." *Science*, 319 (5862), pp. 414 – 415.

---

<sup>2</sup> The computation of Factor 7 scores is somewhat complicated. Throughout the survey, higher values are generally preferred. For example, more satisfaction is better than dissatisfaction. For nearly all the items of this factor, more is not preferred. For example, turning in assignments late more often should be discouraged. That was not true for one item, amount of assigned reading completed. Doing more of the assigned reading is considered to be a good behavior. Therefore, amount of reading was reverse coded to create a scale where higher values are less academically fruitful. That reversal caused all items in this factor to be consistently ordered. However, the resulting factor score was inconsistent with all other factor scores (i.e., 1-6 and 8). To produce a consistently ordered factor score profile in which higher is better, the last step, standardization to a mean of 5 and standard deviation of 2, was done by subtracting the standard deviation of a score from the mean instead of adding it to the mean.

**Table A: SERU 2011 Factor Analysis Principal Components -- Varimax Rotation, Orthogonal Solution (Displaying Loadings > 0.3)**

	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Factor7	Factor8
13. Please rate your level of satisfaction with the following aspects of your University education.								
UC grade point average	0.41							
Overall social experience	0.41							
Overall academic experience	0.60							
Value of your education for the price you're paying	0.52							
14. Please rate your level of agreement with the following statements.								
I feel that I belong at this campus	0.45							
Knowing what I know now, I would still choose to enroll at this campus	0.50							
18. Please answer the following questions about your major.								
Do you understand how the requirements of your major combine to produce a coherent understanding of a field of study?	0.36							
Are the program requirements well defined?	0.37							
Are department rules and policies clearly communicated?	0.41							
Is the description of the major in the catalog accurate?	0.37							
Are there open channels of communication between faculty and students regarding student needs, concerns, and suggestions?	0.47							
Are students treated equitably and fairly by the faculty?	0.42							
Do faculty provide prompt and useful feedback on student work?	0.47							
19. How satisfied are you with each of the following aspects of your educational experience in the major?								
Variety of courses available in your major	0.61							
Quality of lower-division courses in your major	0.59							
Quality of upper-division courses in your major	0.63							
Advising by <u>faculty</u> on academic matters	0.67							
Advising by student peer advisors on academic matters	0.58							
Advising by <u>school or college staff</u> on academic matters	0.62							
Advising by <u>departmental staff</u> on academic matters	0.66							
Quality of faculty instruction	0.68							
Quality of teaching by graduate student GSI's (TA's)	0.51							
Availability of courses for general education or breadth requirements	0.58							
Availability of courses needed for graduation	0.60							
Access to small classes	0.57							
Access to faculty outside of class	0.66							
Ability to get into a major that you want	0.50							
Opportunities for research experience or to produce creative products	0.56							
Educational enrichment programs (e.g., study abroad, UCDC, internships)	0.55							
Accessibility of library staff	0.44							
Availability of library research materials	0.44							

**Table A: SERU 2011 Factor Analysis Principal Components -- Varimax Rotation, Orthogonal Solution (Displaying Loadings > 0.3)**

	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Factor7	Factor8
2. Please rate your level of proficiency in the following areas when you started at this campus and now.								
Current ability level								
Analytical and critical thinking skills								0.65
Ability to be clear and effective when writing								0.63
Ability to read and comprehend academic material								0.64
Understanding of a specific field of study								0.58
Ability to speak clearly and effectively in English								0.64
Understanding international perspectives (economic political, social, cultural etc.)								0.57
Leadership skills								
Computer skills								0.56
Internet skills								0.64
Library research skills								0.53
Other research skills								0.58
Ability to prepare and make a presentation								0.61
Interpersonal (social) skills								0.55
3. Similarly, please rate your abilities now and when you first began at this university on the following dimensions.								
Current ability level								
Ability to appreciate, tolerate and understand racial and ethnic diversity								0.54
Ability to appreciate the fine arts (e.g., painting, music, drama, dance)								0.49
Ability to appreciate cultural and global diversity								0.56
Understanding the importance of personal social responsibility								0.57
Self awareness and understanding								0.58
5. How frequently during this academic year have you done each of the following?								
Sought academic help from instructor or tutor when needed								0.39
Worked on class projects or studied as a group with other classmates outside of class								0.36
Helped a classmate better understand the course material when studying together								0.32
								0.32
								0.35
6. How frequently have you engaged in these activities so far this academic year?								
Taken a small research-oriented seminar with faculty								0.52
Communicated with a faculty member by email or in person								0.58
Talked with the instructor outside of class about issues and concepts derived from a course								0.68
Interacted with faculty during lecture class sessions								0.66
Worked with a faculty member on an activity other than coursework (e.g., student organization, campus committee, cultural activity)								0.57

**Table A: SERU 2011 Factor Analysis Principal Components -- Varimax Rotation, Orthogonal Solution (Displaying Loadings > 0.3)**

	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Factor7	Factor8
7. During this academic year, how often have you done each of the following?								
Contributed to a class discussion			0.60					
Brought up ideas or concepts from different courses during class discussions			0.62					
Asked an insightful question in class			0.65					
Found a course so interesting that you did more work than was required			0.56					
Chosen challenging courses, when possible, even though you might lower your GPA by doing so			0.34					
Made a class presentation			0.46					
Had a class in which the professor knew or learned your name			0.57					
12. Indicate the following research and creative activities that you are currently doing or have completed as a UC student.								
At least one student research course (e.g., course 99)			0.31					
At least one independent study course (e.g., 199)			0.33					
Assist faculty in <u>research with course credit</u>								
Assist faculty in <u>research for pay without course credit</u>								
Assist faculty in <u>research as a volunteer without course credit</u>								
Work on <b>creative projects</b> under the direction of faculty <u>with course credit</u>								
Work on <b>creative projects</b> under the direction of faculty <u>for pay without course credit</u>								
Work on <b>creative projects</b> under the direction of faculty <u>as a volunteer without course credit</u>			0.35					
20. How many professors do you know well enough to ask for a letter of recommendation in support of an application for a job or for graduate or professional school?								
			0.55					
2. Please rate your level of proficiency in the following areas when you started at this campus and now.								
Change between self-reported current skill level and skill level at entry								
Analytical and critical thinking skills			0.62					
Ability to be clear and effective when writing			0.57					
Ability to read and comprehend academic material			0.63					
Understanding of a specific field of study			0.56					
Ability to speak clearly and effectively in English			0.53					
Understanding international perspectives (economic political, social, cultural etc.)			0.64					
Leadership skills								
Computer skills			0.49					
Internet skills			0.57					
Library research skills			0.54					
Other research skills			0.61					

**Table A: SERU 2011 Factor Analysis Principal Components -- Varimax Rotation, Orthogonal Solution (Displaying Loadings > 0.3)**

	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Factor7	Factor8
Ability to prepare and make a presentation				0.61				
Interpersonal (social) skills				0.50				
3. Similarly, please rate your abilities now and when you first began at this university on the following dimensions.								
Change between self-reported current skill level and skill level at entry								
Ability to appreciate, tolerate and understand racial and ethnic diversity				0.61				
Ability to appreciate the fine arts (e.g., painting, music, drama, dance)				0.53				
Ability to appreciate cultural and global diversity				0.65				
Understanding the importance of personal social responsibility				0.64				
Self awareness and understanding				0.61				
5. How frequently during this academic year have you done each of the following?								
Raised your standard for acceptable effort due to the high standards of a faculty member							0.31	
Extensively revised a paper at least once before submitting it to be graded			0.33					
16. Thinking back over your coursework this academic year, how often were you REQUIRED to do the following?								
Recognize or recall specific facts, terms and concepts							0.53	
Explain methods, ideas, or concepts and use them to solve problems							0.64	
Break down material into component parts or arguments into assumptions to see the basis for different outcomes and conclusions							0.73	
Judge the value of information, ideas, actions and conclusions based on the soundness of sources, methods and reasoning							0.75	
Create or generate new ideas, products or ways of understanding							0.63	
17. Thinking back on this academic year, how often have you done each of the following?								
Used facts and examples to support your viewpoint							0.62	
Incorporated ideas or concepts from different courses when completing assignments							0.63	
Examined how others gathered and interpreted data and assessed the soundness of their conclusions							0.70	
Reconsidered your own position on a topic after assessing the arguments of others							0.65	
4. Indicate how strongly you agree or disagree with each of the following statements.								
I feel free to express my <u>political beliefs</u> on campus							0.76	
I feel free to express my <u>religious beliefs</u> on campus							0.80	
Students are respected here regardless of their <u>economic or social class</u>							0.72	
Students are respected here regardless of their <u>gender</u>							0.73	
Students are respected here regardless of their <u>race or ethnicity</u>							0.76	



**Table A: SERU 2011 Factor Analysis Principal Components -- Varimax Rotation, Orthogonal Solution (Displaying Loadings > 0.3)**

	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Factor7	Factor8
Students are respected here regardless of their <u>religious beliefs</u>						0.59		
Students are respected here regardless of their <u>political beliefs</u>						0.56		
Students are respected here regardless of their <u>sexual orientation</u>						0.71		
Students are respected here regardless of their <u>disabilities</u>						0.70		
5. How frequently during this academic year have you done each of the following?								
Turned in a course assignment late							0.34	
Gone to class without completing assigned reading							0.40	
Gone to class unprepared							0.45	
Skipped class							0.42	
8. On average, how much of your assigned course reading have you completed this academic year?							0.35	
15. Were the following factors very important to you in deciding on your major?								
Easy requirements							0.35	
Allows time for other activities							0.38	
21. You told us earlier how much time you spend studying and working in a week. How many hours do you spend on each of these other activities in a typical 7 day week?								
Attending movies, concerts, sports, or other entertainment events							0.51	
Participating in physical exercise, recreational sports, or physically active hobbies							0.34	
Participating in student clubs or organizations							0.40	
Pursuing a recreational or creative interest (arts/crafts, reading, music, hobbies, etc.)							0.36	
Socializing with friends							0.58	
Partying							0.58	
Using the computer for non-academic purposes (games, shopping, email/instant messaging, etc.)							0.43	
Watching TV							0.38	
Community Service							0.34	
2. Please rate your level of proficiency in the following areas when you started at this campus and now.								
Current ability level								
Quantitative (mathematical and statistical) skills								0.59
Change between self-reported current skill level and skill level at entry								
Quantitative (mathematical and statistical) skills				0.31				0.39
15. Were the following factors very important to you in deciding on your major?								
Leads to a high paying job								0.52
Prepares me for a fulfilling career								0.33
Prestige								0.44

**Factor 1: Satisfaction with Educational Experience (Displaying Loadings > 0.3)**

		<b>Subfactor 1</b>	<b>Subfactor 2</b>	<b>Subfactor 3</b>	<b>Subfactor 4</b>	<b>Subfactor 5</b>
Quality of teaching by graduate student GSI's (TA's)	RUC11MJRTAINST	0.58		0.43		0.30
Quality of upper-division courses in your major	RUC11MJRLDQUAL	0.67	0.35	0.41		
Quality of faculty instruction	RUC11MJRFACINST	0.70	0.45	0.57	0.30	0.33
Quality of lower-division courses in your major	RUC11MJRUDQUAL	0.72	0.41	0.42	0.32	
Opportunities for research experience or to produce creative products	RUC11MJRRESOPP	0.54	0.38	0.46		0.54
Ability to get into a major that you want	RUC11MJRGETMJR	0.54	0.39	0.35		0.44
Access to small classes	RUC11MJRSMLCLASS	0.65	0.34	0.44		0.32
Access to faculty outside of class	RUC11MJRFACACCESS	0.64	0.40	0.58		0.46
Availability of courses for general education or breadth requirements	RUC11MJRGEAVAIL	0.71		0.38		0.36
Availability of courses needed for graduation	RUC11MJRCRSAVAIL	0.73	0.31	0.36		0.33
Variety of courses available in your major	RUC11MJRVARIETY	0.72	0.35	0.37	0.32	
UC grade point average	RUC1SATGPA	0.36	0.51			
Value of your education for the price you're paying	RUC1SATVALUE	0.47	0.70	0.33		
Overall academic experience	RUC1SATACADEMIC	0.55	0.80	0.40		
Overall social experience	RUC1SATSOCIAL	0.30	0.78			
Knowing what I know now, I would still choose to enroll at this campus	RUC1AGREEREENRLL	0.37	0.83	0.33		
I feel that I belong at this campus	RUC1AGREEBELONG	0.33	0.85	0.32		
Are students treated equitably and fairly by the faculty?	RUC11MJRFAIR			0.41	0.48	
Do faculty provide prompt and useful feedback on student work? regarding student needs, concerns, and suggestions?	RUC11MJRFEEDBACK RUC11MJROPEN	0.37		0.45 0.54	0.41 0.45	
Advising by student peer advisors on academic matters	RUC11MJRPEERADVC	0.45	0.32	0.72		0.41
Advising by <u>school or college staff</u> on academic matters	RUC11MJRCOLADVC	0.46	0.32	0.82		0.36
Advising by <u>faculty</u> on academic matters	RUC11MJRFACADVC	0.54	0.36	0.80		0.33
Advising by <u>departmental staff</u> on academic matters	RUC11MJRDEPADVC	0.49	0.32	0.84		0.35
coherent understanding of a field of study?	RUC11MJRCOHERENT	0.31			0.58	
Is the description of the major in the catalog accurate?	RUC11MJRCATALOG				0.69	
Are department rules and policies clearly communicated?	RUC11MJRCLRRULES			0.32	0.68	
Are the program requirements well defined?	RUC11MJRREQUIRE				0.73	
Educational enrichment programs (e.g., study abroad, UCDC, internships)	RUC11MJRENRICH	0.49	0.35	0.46		0.60
Availability of library research materials	RUC11MJRLIBRES	0.39		0.32		0.88
Accessibility of library staff	RUC11MJRLIBSTAFF	0.38		0.35		0.90

**Coefficient Alpha**

Factor 1: Satisfaction with Educational Experience	0.92
Subfactor 1a: Quality of Instruction and Courses in the Major	0.76
Subfactor 1b: Satisfaction with Access and Availability of Courses in the Major	0.82
Subfactor 1c: Sense of Belonging and Satisfaction	0.85
Subfactor 1d: Satisfaction with Advising and Out of Class Contact	0.80
Subfactor 1e: Clarity of Program Requirements, Policies & Practices	0.66
Subfactor 1f: Satisfaction with Library Support	0.77

**Factor 2: Current Skills Self-Assessment -- Nonquantitative (Displaying Loadings > 0.3)**

		<b>Subfactor 1</b>	<b>Subfactor 2</b>	<b>Subfactor 3</b>
Understanding international perspectives (economic political, social, cultural etc.)	RUC1SKILLNTRNT_NTRNTT2	0.56	0.48	0.43
Understanding of a specific field of study	RUC1SKILLMJR_MJRT2	0.71	0.33	0.46
Ability to speak clearly and effectively in English	RUC1SKILLSPEAK_SPEAKT2	0.68	0.38	0.42
Ability to be clear and effective when writing	RUC1SKILLWRITE_WRITET2	0.78	0.36	0.43
Ability to read and comprehend academic material	RUC1SKILLREAD_READT2	0.81	0.36	0.43
Analytical and critical thinking skills	RUC1SKILLCRIT_CRITT2	0.82	0.33	0.42
<b>Interpersonal (social) skills</b>	<b>RUC1SKILLSOC_SOCT2</b>	<b>0.51</b>	<b>0.48</b>	<b>0.52</b>
<b>Ability to prepare and make a presentation</b>	<b>RUC1SKILLPRSNT_PRSNTT2</b>	<b>0.56</b>	<b>0.42</b>	<b>0.72</b>
Self awareness and understanding	RUC1ABLESELF_SELFT2	0.48	0.69	0.42
Ability to appreciate the fine arts (e.g., painting, music, drama, dance)	RUC1ABLEARTS_ARTST2	0.30	0.74	0.32
Understanding the importance of personal social responsibility	RUC1ABLERESP_RESPNT2	0.42	0.81	0.39
Ability to appreciate, tolerate and understand racial and ethnic diversity	RUC1ABLETOLER_TOLERT2	0.35	0.82	0.33
Ability to appreciate cultural and global diversity	RUC1ABLEGLOBL_GLOBLT2	0.36	0.88	0.35
Library research skills	RUC1SKILLRES_LREST2	0.36	0.39	0.78
Other research skills	RUC1SKILLORES_OREST2	0.46	0.39	0.82
Computer skills	RUC1SKILLCMPTR_CMPTRT2	0.42		0.72
Internet skills	RUC1SKILLINT_INTT2	0.46	0.33	0.77
		<b>Coefficient Alpha</b>		
Factor 2: Current Skills Self-Assessment (Nonquantitative)		0.91		
Subfactor 2a: Critical Thinking and Communication		0.83		
Subfactor 2b: Cultural Appreciation and Social Awareness		0.85		
<b>Subfactor 2c: Computer, Research and Presentation Skills</b>		<b>0.82</b>		

**Changes:**

- Drop Interpersonal (social) skills
- Move presentation skills to subfactor with library and other research skills
- Changed label for subfactor 2c

**Factor 3: Engagement with Studies (Displaying Loadings > 0.3)**

		Subfactor 1	Subfactor 2	Subfactor 3
Chosen challenging courses, when possible, even though you might lower your GPA by doing so	RUC1CHLLNGCOURSE	0.41		
Made a class presentation	RUC1CHLLNGPRESENT	0.56		0.39
How many professors do you know well enough to ask for a letter of recommendation in support of an application for a job or for graduate or professional school?	RUC1PROF1RECOM	0.58	0.35	
Communicated with a faculty member by email or in person	RUC1FCLTYCOMMUN	0.68		0.42
Found a course so interesting that you did more work than was required from a course	RUC1CHLLNGINTRST RUC1FCLTYDISCEXT	0.64 0.73		0.43
Had a class in which the professor knew or learned your name	RUC1CHLLNGNAME	0.73		
Interacted with faculty during lecture class sessions	RUC1FCLTYLECTURE	0.82		0.32
Contributed to a class discussion	RUC1CHLLNGCLSDIS	0.81		
Brought up ideas or concepts from different courses during class discussions	RUC1CHLLNGDIFCLS	0.82		
Asked an insightful question in class	RUC1CHLLNGASKIN	0.84		
Work on <b>creative projects</b> under the direction of faculty <u>with course credit</u>	RUC1CREATSCH		0.38	
Work on <b>creative projects</b> under the direction of faculty <u>for pay without course credit</u>	RUC1CREATPAY		0.56	
At least one student research course (e.g., course 99)	RUC1RES99		0.55	
<u>course credit</u>	RUC1CREATVOL		0.57	
Assist faculty in <b>research for pay without course credit</b>	RUC1RESFACPAY		0.57	
<b>Worked with a faculty member on an activity other than coursework (e.g., student organization, campus committee, cultural activity)</b>	RUC1FCLTYOTHACT	0.48	0.51	0.30
Taken a small research-oriented seminar with faculty	RUC1FCLTYSMNR	0.40	0.55	
Assist faculty in <b>research as a volunteer without course credit</b>	RUC1RESFACVOL		0.62	
At least one independent study course (e.g., 199)	RUC1RES199		0.56	
Assist faculty in <b>research with course credit</b>	RUC1RESFACSCH		0.64	
Sought academic help from instructor or tutor when needed together	RUC1SOUGHTHELP	0.35		0.63
of class	RUC1HELPEDMATE	0.34		0.86
	RUC1CLASSPROJECT			0.87
		Coefficient Alpha		
Factor 3: Engagement with Studies		0.87		
F3a: Academic Involvement and Initiative		0.90		
F3b: Research or Creative Projects Experience		0.74		
F3c: Collaborative Work		0.74		

**Changes:**

Move worked with faculty member on activity other than coursework to first subfactor.

**Factor 4: Gains in Self-Assessment of Skills -- Nonquantitative (Displaying Loadings > 0.3)**

		<b>Subfactor 1</b>	<b>Subfactor 2</b>	<b>Subfactor 3</b>
Understanding international perspectives (economic political, social, cultural etc.)	RUC11SKILLNTRNAT_NTRNATG	0.55	0.59	0.43
Understanding of a specific field of study	RUC11SKILLMJR_MJRG	0.32	0.67	0.42
Ability to speak clearly and effectively in English	RUC11SKILLSPEAK_SPEAKG	0.35	0.60	0.40
Ability to be clear and effective when writing	RUC11SKILLWRITE_WRITEG	0.32	0.77	0.39
Ability to read and comprehend academic material	RUC11SKILLREAD_READG	0.35	0.81	0.43
Analytical and critical thinking skills	RUC11SKILLCRIT_CRITG	0.37	0.80	0.41
<b>Interpersonal (social) skills</b>	<b>RUC11SKILLSOC_SOCCG</b>	<b>0.47</b>	<b>0.34</b>	<b>0.48</b>
<b>Ability to prepare and make a presentation</b>	<b>RUC11SKILLPRSNT_PRSNTG</b>	<b>0.38</b>	<b>0.50</b>	<b>0.71</b>
Self awareness and understanding	RUC11ABLESELF_SELFG	0.70	0.39	0.37
Ability to appreciate the fine arts (e.g., painting, music, drama, dance)	RUC11ABLEARTS_ARTSG	0.70	0.31	0.31
Understanding the importance of personal social responsibility	RUC11ableRESPN_RESPNG	0.78	0.37	0.37
Ability to appreciate, tolerate and understand racial and ethnic diversity	RUC11ABLETOLER_TOLERG	0.78	0.33	0.32
Ability to appreciate cultural and global diversity	RUC11ABLEGLOBL_GLOBLG	0.84	0.36	0.36
Library research skills	RUC11SKILLRES_LRESG	0.31	0.41	0.74
Other research skills	RUC11SKILLORES_ORESG	0.34	0.47	0.78
Computer skills	RUC11SKILLCMPTR_CMPTRG		0.36	0.64
Internet skills	RUC11SKILLINT_INTG	0.37	0.34	0.76
		<b>Coefficient Alpha</b>		
Factor 4: Gains in Self-Assessment of Skills (Nonquantitative)		0.89		
Subfactor 4a: Gains in Critical Thinking and Communication		0.81		
Subfactor 4b: Gains in Cultural Appreciation and Social Awareness		0.82		
Subfactor 4c: Gains in Computer and Research Skills		0.78		

**Changes:**

Drop interpersonal (social) skills

Move presentation skills to subfactor with library and other research skills

Changed label for subfactor 2c

**Factor 5: Development of Scholarship (Displaying Loadings > 0.3)**

		<b>Subfactor 1</b>	<b>Subfactor 2</b>	<b>Subfactor 3</b>
Used facts and examples to support your viewpoint	RUC1USEDFACTS	0.68	0.56	0.30
Create or generate new ideas, products or ways of understanding	RUC1GENERATION	0.76	0.41	
Judge the value of information, ideas, actions and conclusions based on the soundness of sources, methods and reasoning	RUC1EVALUATION	0.77	0.61	
Incorporated ideas or concepts from different courses when completing assignments	RUC1SYNTHESIS	0.78	0.42	
Reconsidered your own position on a topic after assessing the arguments of others	RUC1REASSESS	0.81		
Examined how others gathered and interpreted data and assessed the soundness of their conclusions	RUC1EXAMINED	0.86	0.35	
Break down material into component parts or arguments into assumptions to see the basis for different outcomes and conclusions	RUC1ANALYZING	0.67	0.71	
Recognize or recall specific facts, terms and concepts	RUC1RECALL		0.85	
Explain methods, ideas, or concepts and use them to solve problems	RUC1EXPLAIN	0.48	0.87	
Raised your standard for acceptable effort due to the high standards of a faculty member	RUC1RAISEDSTAND			0.82
Extensively revised a paper at least once before submitting it to be graded	RUC1REVISEDPAPER			0.82

	<u>Coefficient Alpha</u>
Factor 5: Development of Scholarship	0.87
Subfactor 5a: Critical Reasoning and Assessment of Reasoning	0.87
Subfactor 5b: Curricular Foundations for Reasoning	0.78
Subfactor 5c: Elevated Academic Effort	0.53

**Factor 6: Campus Climate for Diversity (Displaying Loadings > 0.3)**

		<b>Subfactor 1</b>	<b>Subfactor 2</b>
Students are respected here regardless of their <u>sexual orientation</u>	RUC1AGRSEXORIENT	0.83	0.38
Students are respected here regardless of their <u>economic or social class</u>	RUC1AGRSES	0.80	0.48
Students are respected here regardless of their <u>race or ethnicity</u>	RUC1AGRRACE	0.87	0.43
Students are respected here regardless of their <u>gender</u>	RUC1AGRGENDER	0.84	0.41
I feel free to express my <u>religious beliefs</u> on campus	RUC1AGRRSPCTRLGN	0.80	0.66
I feel free to express my <u>political beliefs</u> on campus	RUC1AGRXPSPOLI	0.40	0.91
Students are respected here regardless of their religions <u>beliefs</u>	RUC1AGRXPSPRLGN	0.45	0.90
Students are respected here regardless of their <u>political beliefs</u>	RUC1AGRRSPCTPOLI	0.71	0.73
Students are respected here regardless of their <u>disabilities</u>	RUC1AGRDISABIL	0.81	0.38
		<b>Coefficient Alpha</b>	
Subfactor 6: Campus Climate for Diversity		0.91	
Subfactor 6a: Campus Climate		0.92	
Subfactor 6b: Freedom to Express Beliefs		0.84	

**Changes**

- Two subfactors instead of three.
- Included new disabilities item on first subfactor

**Factor 7: Academic Disengagement (Displaying Loadings > 0.3)**

		Subfactor 1	Subfactor 2	Subfactor 3	Subfactor 4
Participating in student clubs or organizations	RUC1TIMECLUB			0.71	
Participating in physical exercise, recreational sports, or physically active hobbies	RUC1TIMEEXERCISE		0.36	0.60	
Pursuing a recreational or creative interest (arts/crafts, reading, music, hobbies, etc.)	RUC1TIMECREATE		0.50	0.39	
Watching TV	RUC1TIMETV		0.68		
Using the computer for non-academic purposes (games, shopping, email/instant messaging, etc.)	RUC1TIMECMPTRNON		0.72		
Attending movies, concerts, sports, or other entertainment events	RUC1TIMEMOVIES		0.50	0.61	
Partying	RUC1TIMEPARTY		0.62	0.50	
Socializing with friends	RUC1TIMEFRIEND		0.76	0.38	
Turned in a course assignment late	RUC1LATEASSIGN	0.56			
On average, how much of your assigned course reading have you completed this academic year?	RUC1AMOUNTREAD	-0.63			
Skipped class	RUC1SKIPPEDCLASS	0.69			
Gone to class without completing assigned reading	RUC1WITHOUTREAD	0.84			
Gone to class unprepared	RUC1CLASSUNPREP	0.85			
Easy requirements	RUC11MJREASY				0.83
Allows time for other activities	RUC11MJRFREETIME				0.83
Community service	RUC1TIMECOMMSRV			0.75	

	Coefficient Alpha
Factor 7: Academic Disengagement (Inverted Scale)	0.72
Subfactor 7a: Extracurricular Engagement (Inverted Scale)	0.68
Subfactor 7b: Poor Academic Habits (Inverted Scale)	0.43
Subfactor 7c: Non-academic Motivations (Inverted Scale)	0.71
Subfactor 7d: Easy Major	0.57

**Changes**

Community service is a new item.

Four subfactors instead of three.



**Factor 8: Quantitative Professions (Displaying Loadings > 0.3)**

		<b>Subfactor 1</b>	<b>Subfactor 2</b>
Prepares me for a fulfilling career	RUC11MJRFULFILL		0.51
Prestige	RUC11MJRPRESTIGE		0.81
Leads to a high paying job	RUC11MJRHIGHPAY		0.72
Quantitative (mathematical and statistical) skills	RUC11SKILLMATH_MATHG	0.86	
Quantitative (mathematical and statistical) skills	RUC1SKILLMATH_MATHT2	0.85	
		<b>Coefficient Alpha</b>	
Factor 8: Quantitative Professions		0.53	
Subfactor 8a: Career Orientation		0.44	
Subfactor 8b: Quantitative Skills		0.64	

**Time Factor: Use of Time (Displaying Loadings > 0.3)**

		<b>Subfactor 1</b>	<b>Subfactor 2</b>
Of your total hours spent working for pay, about how many hours did you work on campus?	RUC1TIMEPAIDON	0.79	
Of your total hours spent working for pay, about how many hours were related to your academic interests?	RUC1TIMEPAIDIN	0.79	
Paid employment (include paid internships)	RUC1TIMEPAIDWORK	0.84	
Attending classes, discussion sections or labs	RUC1TIMECLASS		0.83
Studying and other academic activities outside of class	RUC1TIMESTUDY		0.83
		<b>Coefficient Alpha</b>	
Factor T: Use of Time (Academic and Employment)		0.54	
Subfactor Ta: Time Employed		0.74	
Subfactor Tb: Academic Time		0.55	