Undergraduate Exit Survey

Spring 2017 Findings

Institutional Research, Office of the Provost

November 28, 2017

EXECUTIVE SUMMARY

This report summarizes the results of the 2017 Undergraduate Exit Survey. The survey was designed by the Office of the Provost and administered to 497 potential graduating students (undergraduate level) at Nazarbayev University (NU) from mid-April to mid-June 2017.

Purpose of the Survey

The purpose of the Undergraduate Exit Survey is to promote a data-driven understanding of the educational experiences of NU's graduating students (undergraduate level) and of their post-graduation plans. Data collected through this survey will help shed light on the level/quality of academic support that NU provided to its third cohort of undergraduate students (class of 2017) and support institutional self-evaluation.

Survey Response Rate

Overall, 316 graduating students participated in the survey in Spring 2017, for a response rate of 64%. Response rates were slightly higher for students with higher academic performance compared to those with lower academic performance but were similar across schools and gender groups. Analytical steps were taken to ensure that survey results did not suffer from non-response bias.

Summary of Key Findings

Composite indicators of student experiences and perceptions

We constructed 13 composite indicators (Table 5) of student perceptions and experiences based on student ratings on specific items and on the correlation among items that measured a specific dimension. To facilitate interpretation, composite indicators were computed on a scale from 0 to 100. Key findings include the following:

Graduating students had a highly positive perception of NU (average score = 72 out of 100). They were also highly positive about the skills and competencies acquired at NU (average score = 73) and about how much emphasis NU put on graduate attributes during their undergraduate studies (average score = 70).

Graduating students also rated themselves high on key psychological measures, including (1) self-esteem, or perception of one's own worth relative to an "ideal self" (average score = 71) and (2) self-concept, or perception of one's competence relative to others (average score = 69). They rated themselves high on individual development—how well NU met their career, personal, and intellectual needs—(average score = 69), and were highly satisfied with campus resources and services (average score = 66).

Graduating students were moderately satisfied with their program/major (average score = 64), and with their curricular preparation for life after graduation—i.e., career opportunities and postgraduate studies—(average score = 60). Students, however, engaged in key academic behaviors (that empirical research has found to contribute to student success) with low to moderate frequency (average score = 46).

Students tended to be less dependent on others (family, friends, classmates, faculty, staff) for emotional, social, and academic support (average score = 43)—an indication that they tended to be more autonomous. They encountered a relatively low level of difficulties (average score = 35) and found their experiences to be moderately stressful (average score = 52).

Other experiences

- *Enriching activities completed*: 87% of the students reported that they participated in an internship, 71% in a volunteer activity, and 24% in a study abroad program. Also, 64% reported that they completed a

culminating senior experience (capstone project, thesis) and 54% that they worked on a research project with a faculty member.
- *Writing*: Students reported that they produced, on average, seven shorter (up to five pages) and five longer (more than five pages) papers during the academic year.
- *Class absenteeism and its reasons*: 93% of the students reported that they missed at least one class during Spring 2017. Reasons for missing classes included illness (68%), using class time to complete assignments from other classes (57%), inconvenient class schedule (53%), low quality of teaching (54%), class attendance not being required (45%), course not relevant to the student's interests (47%), and need to participate in extracurricular activities (35%). Only 16% of the students reported course difficulty to be a reason for missing class.
- *Student employment*: 51% of the student reported that they worked for pay, at least at some point, during the academic year. Seventy-eight percent (78%) of these students indicated that they worked 15 hours or less per week and 10% worked more than 20 hours per week.

Post-graduation plans

- The majority of the graduating students (54%) expected to pursue graduate or professional studies in Fall 2017, whereas 39% expected to enter the workforce (and 7% to engage in other activities).
- Among the 105 students who expected to enter the workforce, 47% reported that they had received a job offer (as of mid-April to mid-June 2017).
- Key highlights for the 146 students who planned to attend graduate or professional school include:
    - 35% had already received an admission offer.
    - 76% planned to pursue a master's and 17% a doctorate degree.
    - Science and Technology was the most popular field of postgraduate study (27%) followed by Engineering (23%).
    - Nazarbayev University was the most frequently cited prospective institution (36%).

Suggestions for NU, interactions with faculty, and advice to new students

In open-ended comments, improving academic programs (design, flexibility, and relevance); increasing course availability and variety; and improving facilities (dormitories in particular) emerged as the top suggestions for improvement. Advising/mentoring/supervision; working with faculty on projects; and faculty support (personal, psychological, and intellectual) emerged as the areas in which students had some of the most positive/meaningful interactions with faculty members. In their advice to new NU students, graduating students particularly stressed the importance of developing good planning and self-management skills; being socially active and participating in extracurricular activities; and studying/working diligently.

Comparing graduating student perceptions/experiences: 2017 vs. 2016

Further analysis of the 13 composite indicators revealed that the perspectives and experiences of 2017 graduating students were consistent with those of the 2016 graduating cohorts. There was no meaningful difference between the two groups in terms of: NU perception, program satisfaction, curricular preparation for career and further study, skills development, graduate attribute emphasis, frequency of academic behaviors, level of difficulties encountered, dependence on others, self-concept, stress level, satisfaction with resources & services, and individual development. Students' self-esteem was an exception: 2017 graduating students recorded a level of self-esteem that was slightly lower compared to the level observed among 2016 graduating students.

With respect to post-graduation plans, the proportions of graduating students who expected to pursue graduate and professional degree programs were similar in 2017 (54%) and 2016 (53%).

Summary, Conclusion, and Perspectives

Analyses of the 2017 Undergraduate Exit Survey data suggest that, overall, graduating students had a positive perception of different aspects of their undergraduate experiences. More particularly, institutional-level experience (including satisfaction with NU and perception of graduate attribute emphasis) was rated high, as were

skill/competency development, psychological development, individual development, and satisfaction with campus resources and services. These results are consistent with those of the 2016 Undergraduate Exit Survey.

Analyses also revealed that, student perceptions/experiences were a lot more positive on some aspects but also a lot less positive on others. Below are some examples:

- *Perception of NU*: Whereas students were very strongly inclined to recommend NU to other potential students, they were a lot less positive about how effectively student feedback is used to improve learning at NU.
- *Program satisfaction*: Although students tended to be more satisfied with their instructors' availability out of class, they tended to be a lot less satisfied with the availability and variety of courses in their program.
- *Curricular preparation*: Students tended to be more positive about how well their undergraduate curriculum prepared them for graduate/professional studies; however, they were a lot less positive about how well the curriculum prepared them for career opportunities.
- *Individual development*: Students were highly positive about how well NU met their needs for personal and intellectual growth; however, they were a lot less positive about how well NU met their overall career preparation needs.

Student success in higher education is not simply a function of the support students receive from the institution. It is also a function of students' own engagement and effort. Like in 2016, we found that 2017 graduating students scored relatively low on frequency of key academic behaviors. For instance, students reported low levels of interaction with faculty members: Only 22% of the students indicated that they "often" or "very often" discussed their academic performance with faculty members; 24% indicated that they "often" or "very often" discussed course topics and ideas with faculty members outside class. Students, however, rated faculty availability out of class relatively high. This contrast suggests that many students may not have taken full advantage of the academic support and wisdom that faculty members offer. Empirical research has showed, consistently, that student-faculty interaction is a key determinant of a positive and successful academic experience.

Other academic behaviors that appeared to be problematic are class attendance and study habits. With respect to attendance, 93% of the survey respondents indicated that they missed at least one class (and half of the students missed at least four classes) in Spring 2017. Absenteeism, as empirical research has shown, is negatively related to academic success. With respect to study habits, students devoted 16.7 hours per week (seven days), on average, to class preparation (including studying, reading, completing assignments, etc.). This was only 3.3 hours (per week) more than the time they spent socializing with friends. Only about a third of the students spent more than 20 hours of class preparation time per week (at least three hours per day) in Spring 2017. The average graduating student took 29 ECTS credits during the term and, by ECTS standards, each credit typically corresponds to 25-30 hours of work (European Union, 2015). Therefore, there appears to be a large discrepancy between the amount of time expected and the amount actually invested by the average student. By ECTS standards, the amount of time needed for achieving learning outcomes varies from student to student. The observed discrepancy, however, still raises a question on how sufficient the amount of time invested by the average student is for achieving learning outcomes that are appropriate at a given level (course, program, etc.).

Finally, in open-ended comments, improving academic programs (in terms of design, flexibility, and relevance) and offering more courses (in terms of availability and variety) emerged as the top two recommendations graduating students made to NU. These recommendations are consistent with students' rating of their experiences/perceptions relative to their academic program. For instance, only 51% of the students were very positive that they would choose the same program if they had to start over again (compared to 64% who were very positive that they would still choose to come to NU).

In sum, findings from the 2017 Graduating Student Survey are consistent (to a very large degree) with those from the 2016 Survey. As NU embraces continuous improvement, we recommend (as we did in 2016) that faculty members, programs, schools, and the University community reflect on (1) the extent to which the University is integrating student voices/input; (2) how well course offerings (availability and variety) meet the demand and what can be done to improve the situation; (3) how well curricular and extracurricular activities prepare students for future careers and what can be done to improve career preparation. We also suggest that student orientations, class periods, and academic advising sessions be used as opportunities to discuss student *academic engagement* and help students maximize the level/quality of engagement (e.g. interaction with faculty, class attendance, study habits, time management, etc.).

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INTRODUCTION

About the Undergraduate Exit Survey

The Undergraduate Exit Survey aims to promote a data-driven understanding of the educational experiences of NU's graduating students (undergraduate level) and of their post-graduation plans. The survey measures different aspects of graduating students' undergraduate experiences and post-graduation plans. Table 1 summarizes the topics covered in the 2017 Undergraduate Exit Survey, and the number of survey items under each topic.

Table 1. Survey Topics and Items

Survey Topic	Number of Survey Items
Perception of NU (institutional level)	8
Program satisfaction and curricular preparation	12
Development of skills and competencies	17
Graduate attribute emphasis	8
Time usage	8
Frequency of academic behaviors	9
Class absenteeism and its reasons	9
Difficulties encountered	12
Writing and other activities completed	8
Psychological dispositions	18
Post-graduation plan	7
Satisfaction with NU services and facilities	12
Student employment during the year	2
Individual development	3
Open-ended comments	3

This survey was developed by the Office of the Provost, with input from undergraduate schools and from relevant support units. Some questions on the survey were adapted from popular U.S. instruments.

The survey was administered electronically, through Qualtrics, from mid-April to mid-June 2017. Reminders were sent to students once or twice a week.

Target Population, Response Rates, and Survey Completion

The Undergraduate Exit Survey targets undergraduate students who are eligible to complete their Bachelor's degree program at the end of the academic year. In Spring 2017, The Office of the Registrar provided the Office of the Provost with a list of 497 potential graduates. These students were invited to participate in the survey. Overall, 316 students participated, for a response rate of 63.6%. Of the students who completed the survey, 301 (95.3%) actually graduated on May 26, 2017 (official Spring 2017 graduation date). Analyses, however, were conducted using all 316 responses received.

Survey completion rate was also high: 85% of the participants responded to at least 80% of the relevant items on the survey (with 62% of the participants responding to every applicable close-ended item). By survey research standards, a survey participant responding to more than 80% of applicable questions yields a "complete" rather than a "partial" survey response (The American Association for Public Opinion Research, 2008).

Tables 1, 2, and 3 provide response rates (as well as the distribution of students in the population and in the sample of respondents), by school, gender, and prior academic performance.

Table 2. Survey Response Rate by School

	Graduating Students	**Survey Respondents**	**Response Rate (%)**
School of Engineering	172	100	58.1
School of Humanities and Social Sciences	123	81	65.9
School of Science and Technology	202	135	66.8
Total	**497**	**316**	**63.6**

Table 3. Survey Response Rate by Gender

	Graduating Students	**Survey Respondents**	**Response Rate (%)**
Female	204	129	63.2
Male	293	187	63.8
Total	**497**	**316**	**63.6**

Table 4. Survey Response Rate by Level of Academic Performance (Fall 2015 cumulative GPA)

	Graduating Students	**Survey Respondents**	**Response Rate (%)**
Low-achieving (median GPA or below)	250	148	59.2
High-achieving (above median GPA)	247	168	68.0
Total	**497**	**316**	**63.6**

Population and Survey Respondent Distributions

Figure 1. Population and Survey Respondent Distribution by School

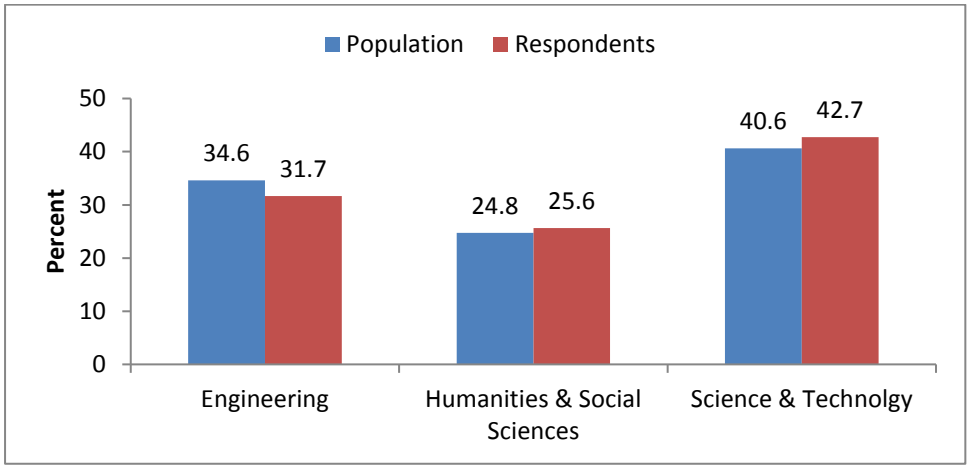


Figure 2. Population and Survey Respondent Distribution by Gender

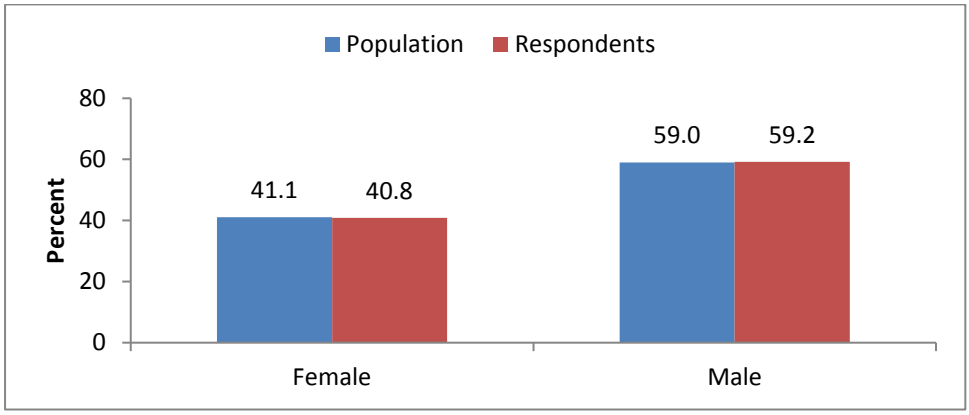
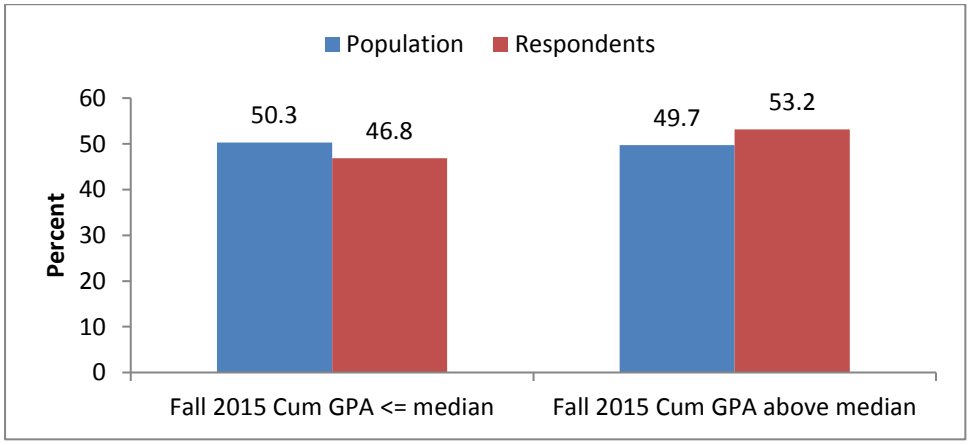


Figure 3. Population and Survey Respondent Distribution by Prior Academic Performance



Data Analysis

We used various analytical approaches. (1) We used Exploratory Factor Analysis and reliability analysis to create thirteen indicators that summarized student perceptions and experience. This analysis was based on more than 100 items that involved a rating scale. For each indicator, we created a composite score on a scale from 0 to 100. This step involved reverse-coding negatively worded items before the analysis. (2) We then computed descriptive statistics (mean, standard deviation, median, and number of respondents) for each indicator. (3) We computed relevant descriptive statistics (mean, standard deviation, frequency distribution of responses, and number of respondents, where applicable) for each close-ended item. The aim of this descriptive analysis was to provide a snapshot description of the perceptions, undergraduate experiences, and post-graduation plans of graduating students.

The survey included three open-ended questions that asked students to comment on different aspects of their undergraduate experience. We coded students' comments in order to identify emerging themes.

Non-Response Error

Differences in response rates across sub-groups can lead to non-response bias, particularly if these sub-groups also differ in their responses to particular survey questions (Kalton, 1983; Pike, 2008) . For information on how we addressed non-response error, see Appendix A.

Limitations

Information collected through surveys is almost always prone to error. Different sources of survey error have been documented in the literature, including sampling error, coverage error, non-response error, and measurement error. These errors can present limitations to the accuracy/precision of survey results. For more information, see Appendix B.

Organization of the Report

This report is organized into two main parts. Part 1 provides relevant descriptive statistics on composite indicators (measures) of student perceptions and experiences. Part 2 provides detailed analyses by survey item.

The report includes a series of appendices that provide more detailed information on non-response bias (Appendix A), limitations related to the precision of survey results (Appendix B), and computation of composite indicators (Appendix C).

I. COMPOSITE INDICATORS OF STUDENT PERCEPTIONS AND EXPERIENCES

We derived 13 composite indicators that summarize different aspects of students' perceptions and experiences, based on student responses to over 100 survey items, using a combination of exploratory factor analysis and reliability analysis. Each indicator consists in a composite score on a scale from 0 (low) to 100 (high). The indicators are as follows:

- *Perception of NU*: a measure based on eight items that assessed how positive students were about their NU experience
- *Program satisfaction*: a measure based on 10 items that assessed how satisfied students were with different aspects of their undergraduate program
- *Curricular preparation (for career and postgraduate studies)*: a measure based on two items that assessed how well the undergraduate curriculum prepared students for career opportunities and graduate/professional studies
- *Development of skills and competencies*: a measure based on 17 items that assessed the extent to which students developed certain skills and competencies
- *Institutional emphasis on graduate attributes*: a measure based on eight items that assessed how well NU emphasized each graduate attribute during students' undergraduate studies
- *Frequency of academic behaviors*: a measure based on 10 items that measured how frequency students engaged in certain academic behaviors, as well as the number of hour spent on class preparation and number classes missed during the term
- *Level of difficulties encountered*: a measure based on 12 items that measured how difficult students found different aspects of their undergraduate experience to be
- *Dependence on others*: a psychological measure based on five items that assessed how much the student depended on other people for emotional, social, and/or academic support during undergraduate studies
- *Self-concept*: a psychological measure based on three items that assessed how well students perceived their own competence relative to other students in their program
- *Self-esteem*: a psychological measure based on five items that assessed how well students perceived their own worth or merit, relative to the "ideal" self
- *Stress level*: a psychological measure based on five items that measured how stressful students found different aspects of their experiences to be
- *Satisfaction with campus resources and services*: a measure based on 12 items that measured how satisfied students were with various campus resources, services, and facilities
- *Individual development*: a measure based on three items that assessed how well NU met student needs for personal growth , intellectual growth, and career preparation

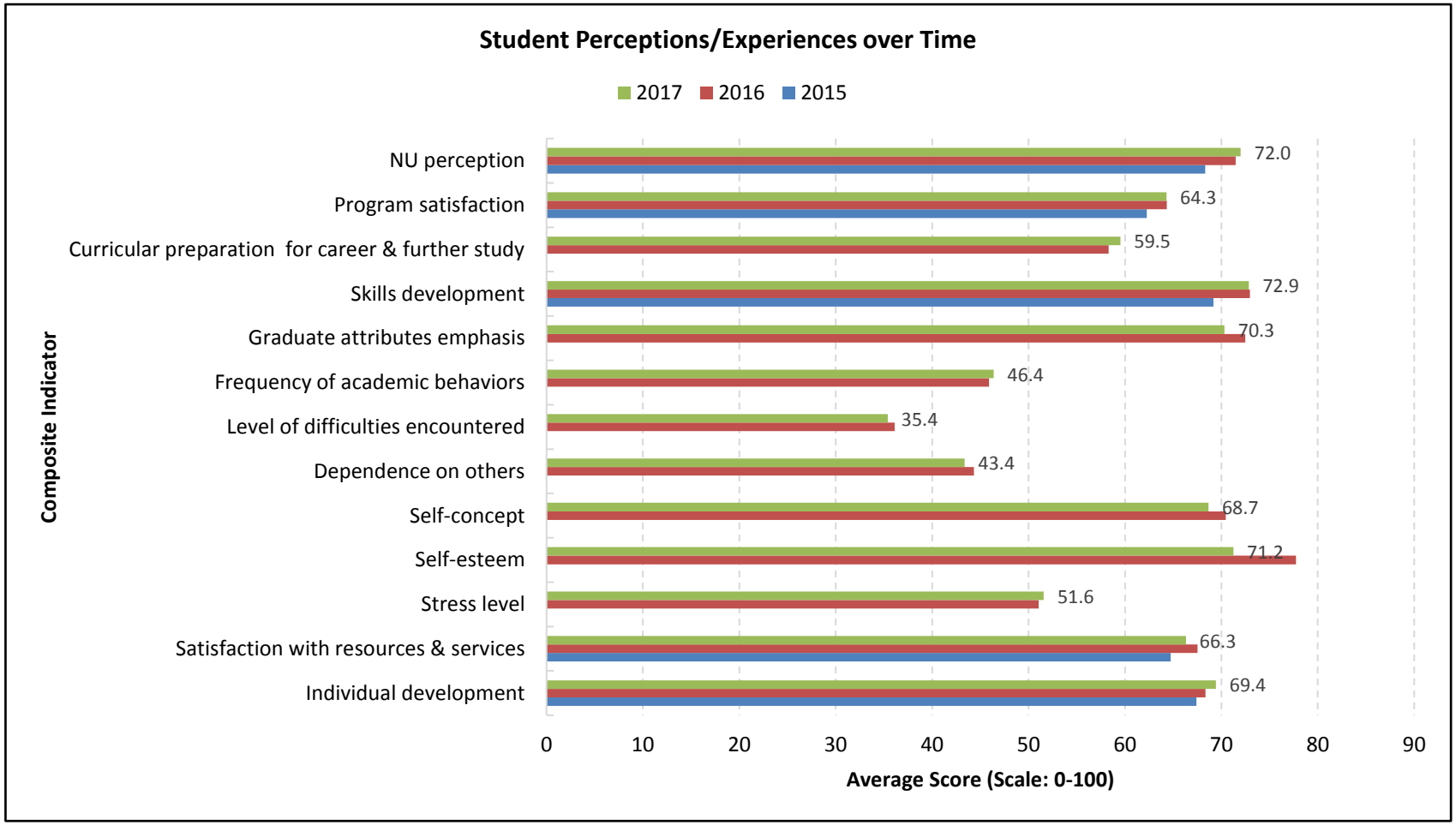
Table 6 provides descriptive statistics (mean, standard deviation, median, and number of respondents) on each composite indicator, overall and by school.

Table 5. Descriptive statistics on composite indicators (Scale: 0 –100).

	All Schools				**School of Engineering**				**School of Humanities & Social Sciences**				**School of Science & Technology**			
	Mean	***SD***	***Median***	***N***	***Mean***	***SD***	***Median***	***N***	***Mean***	***SD***	***Median***	***N***	***Mean***	***SD***	***Median***	***N***
Perception of NU	72.01	18.19	75.00	313	71.66	16.74	75.00	98	69.69	17.88	72.50	80	73.63	19.32	77.50	135
Satisfaction with program	64.30	17.29	64.44	314	59.44	15.61	60.00	99	63.73	17.65	64.44	80	68.19	17.41	66.67	135
Curricular preparation (for career & postgraduate study)	59.54	18.84	62.50	312	60.95	17.52	62.50	97	57.34	18.20	50.00	80	59.81	20.11	62.50	135
Development of skills and competencies	72.86	12.78	72.94	305	74.17	11.31	75.29	99	72.23	12.18	71.76	76	72.22	14.13	71.76	130
Institutional emphasis on graduate attributes	70.32	16.91	70.00	289	69.46	15.90	70.00	93	70.40	14.58	70.00	69	70.91	18.79	70.00	127
Frequency of academic behaviors	46.38	14.52	45.48	285	46.65	13.38	46.55	93	46.50	14.91	45.36	67	46.11	15.21	45.12	125
Level of difficulties encounted	35.40	15.48	35.00	277	35.33	15.38	33.33	91	38.38	14.91	39.17	66	33.81	15.76	35.00	120
Dependence on others (family, friends, faculty, staff)	43.36	20.15	40.00	275	46.00	18.24	46.67	90	38.48	20.95	36.67	66	44.08	20.75	40.00	119
Self-concept (perception of own competence relative to others)	68.65	20.73	66.67	275	72.22	19.47	75.00	90	66.04	20.01	58.33	66	67.40	21.82	66.67	119
Self-esteem (perception of own worth relative to "ideal" self)	71.24	23.20	76.00	272	72.49	21.24	76.00	89	69.83	22.47	72.00	66	71.08	25.10	76.00	117
Stress level	51.57	20.17	53.33	272	50.69	19.83	53.33	89	56.84	20.79	55.83	66	49.27	19.70	53.33	117
Satisfaction with campus resources and services	66.33	15.12	66.67	263	69.02	14.56	72.73	87	61.91	14.96	63.48	64	66.75	15.22	66.67	112
Individual development (career prep and intellectual/personal growth)	69.43	16.79	66.67	268	70.93	16.86	75.00	88	70.13	16.06	66.67	65	67.90	17.14	66.67	115

Item scale: 0 = “Lowest value”, 100 = “Highest value”; SD = Standard Deviation; Median = middle value (half scoring above and half below this value)

Figure 4. Comparing graduating students' perceptions/experiences in 2015, 2016, and 2017



II. DETAILED ANALYSES BY SURVEY ITEM

II.1. Perception of NU Experiences

Table 6. Please indicate the extent to which you agree or disagree with each of the following statements (Scale: 1 – 6).

	All Schools				School of Engineering				School of Humanities & Social Sciences				School of Science & Technology			
	Mean	***SD***	***% "5" or "6"***	***N***	***Mean***	***SD***	***% "5" or "6"***	***N***	***Mean***	***SD***	***% "5" or "6"***	***N***	***Mean***	***SD***	***% "5" or "6"***	***N***
(1) NU has helped me meet the goals I came here to achieve.	4.55	1.07	53.7	313	4.58	1.00	54.1	98	4.44	0.99	48.8	80	4.59	1.17	56.3	135
(2) My experiences here have helped motivate me to make something of my life.	4.87	1.09	66.7	312	4.98	0.98	70.4	98	4.76	1.20	62.5	80	4.84	1.10	66.4	134
(3) I am proud of my accomplishments at NU.	4.70	1.19	58.5	311	4.93	1.10	68.0	97	4.51	1.07	47.5	80	4.66	1.30	58.2	134
(4) I believe student feedback is used effectively to improve student learning.	3.88	1.45	35.5	313	3.91	1.42	35.7	98	3.75	1.39	28.8	80	3.93	1.51	39.3	135
(5) If I had to start over again, I would still choose to come to NU.	4.72	1.48	63.8	312	4.74	1.40	66.3	98	4.57	1.60	57.5	80	4.79	1.48	65.7	134
(6) If I had to start over again, I would still choose the same field of study.	4.29	1.67	50.8	311	4.05	1.52	44.9	98	3.84	1.84	37.5	80	4.73	1.58	63.2	133
(7) I would recommend NU to other potential students.	5.07	1.11	73.5	310	4.99	1.12	71.1	97	5.05	1.24	71.3	80	5.15	1.00	76.7	133
(8) I am satisfied with the overall education I received at NU.	4.77	1.07	66.6	314	4.48	1.07	54.5	99	4.95	1.04	72.8	81	4.88	1.05	71.6	134

Item scale: 1 = "Strongly disagree", 6 = "Strongly agree"; SD = Standard Deviation; % "5" or "6": Percent who selected the highest two response categories ("5" or "6")

II.2. Satisfaction with Program

Table 7. Please rate your satisfaction or dissatisfaction with each of the following aspects of your major/program (Scale: 1 – 6).

	All Schools				School of Engineering				School of Humanities & Social Sciences				School of Science & Technology			
	Mean	***SD***	***% "5" or "6"***	***N***	***Mean***	***SD***	***% "5" or "6"***	***N***	***Mean***	***SD***	***% "5" or "6"***	***N***	***Mean***	***SD***	***% "5" or "6"***	***N***
(1) Quality of teaching	4.33	1.01	43.9	314	3.91	1.01	24.2	99	4.60	0.99	56.3	80	4.48	0.92	51.1	135
(2) Assessment procedures	4.39	1.01	48.7	314	4.05	1.07	37.4	99	4.57	0.94	60.0	80	4.53	0.94	50.4	135
(3) Quality of academic advising	4.20	1.20	39.9	313	3.96	1.05	26.3	99	4.22	1.22	41.8	79	4.37	1.28	48.9	135
(4) Availability of courses you wanted to take	3.40	1.43	23.2	314	3.10	1.37	16.2	99	3.11	1.35	17.5	80	3.79	1.44	31.9	135
(5) Variety of courses offered	3.50	1.42	24.4	312	3.22	1.42	19.2	99	3.35	1.39	21.3	80	3.80	1.39	30.1	133
(6) Availability of your instructors out of class	4.68	1.12	61.3	313	4.54	1.02	53.5	99	4.61	1.23	65.0	80	4.82	1.10	64.9	134
(7) Faculty concern for your academic progress	4.00	1.38	37.4	313	3.77	1.17	25.3	99	3.71	1.47	36.7	79	4.34	1.41	46.7	135
(8) Ability to meet the expectations you had at the beginning	4.21	1.08	40.6	313	4.12	0.92	35.7	98	4.13	1.13	40.0	80	4.33	1.15	44.4	135
(9) NU's ability to meet the expectations you had	4.14	1.09	36.0	311	3.96	0.99	27.6	98	4.07	1.09	36.3	80	4.32	1.14	42.1	133
(10) Your overall experience in your major/program	4.47	1.08	51.9	314	4.23	1.08	45.5	99	4.41	1.14	51.3	80	4.67	1.01	57.0	135

Item scale: 1 = "Very dissatisfied", 6 = "Very satisfied"; SD = Standard Deviation; % "5" or "6": Percent who selected the highest two response categories ("5" or "6")

II.3. Curricular Preparation for Career and Postgraduate Study

Table 8. How well has your undergraduate curriculum prepared you for (Scale: 1 – 5)?

	All Schools				**School of Engineering**				**School of Humanities & Social Sciences**				**School of Science & Technology**			
	Mean	***SD***	***% "4" or "5"***	***N***	***Mean***	***SD***	***% "4" or "5"***	***N***	***Mean***	***SD***	***% "4" or "5"***	***N***	***Mean***	***SD***	***% "4" or "5"***	***N***
(1) Career opportunities	3.21	0.90	35.3	312	3.31	0.87	42.3	97	3.01	0.88	22.5	80	3.27	0.92	37.8	135
(2) Graduate/professional studies	3.55	0.84	52.9	312	3.57	0.76	55.7	97	3.58	0.90	51.3	80	3.52	0.87	51.9	135

Item scale: 1 = "Very inadequately", 5 = "Very well"; SD = Standard Deviation; % "4" or "5": Percent who selected the highest two response categories ("4" or "5")

II.4. Development of Skills and Competencies

Table 9. How would you rate yourself in the following skills and abilities (Scale: 1 – 6)?

	All Schools				School of Engineering				School of Humanities & Social Sciences				School of Science & Technology			
	Mean	*SD*	*% "5" or "6"*	*N*	*Mean*	*SD*	*% "5" or "6"*	*N*	*Mean*	*SD*	*% "5" or "6"*	*N*	*Mean*	*SD*	*% "5" or "6"*	*N*
(1) Time management	3.75	1.22	25.8	314	4.06	1.05	31.3	99	3.50	1.38	21.3	80	3.66	1.20	24.4	135
(2) Writing	4.22	1.00	36.7	313	4.23	0.90	35.4	99	4.47	0.91	45.0	80	4.06	1.09	32.8	134
(3) Oral communication	4.43	1.08	48.1	314	4.43	0.95	43.4	99	4.57	1.02	52.5	80	4.35	1.19	48.9	135
(4) Research	4.40	1.04	46.8	314	4.55	0.90	46.5	99	4.53	0.93	53.8	80	4.23	1.16	43.0	135
(5) Presentation	4.68	0.97	58.3	314	4.69	0.94	57.6	99	4.78	0.95	63.8	80	4.61	0.99	55.6	135
(6) Leadership	4.51	1.06	52.2	314	4.65	1.01	58.6	99	4.59	0.99	57.5	80	4.36	1.13	44.4	135
(7) Problem-solving	4.95	0.88	71.6	313	4.98	0.79	74.5	98	4.89	0.90	66.3	80	4.96	0.93	72.6	135
(8) Self-management (e.g. emotions, stress, life challenges)	4.62	1.18	61.3	313	4.83	1.08	67.3	98	4.45	1.22	56.3	80	4.57	1.22	60.0	135
(9) Search and retrieve information using technology	5.03	0.87	76.4	305	4.98	0.77	77.8	99	4.93	0.98	71.1	76	5.12	0.87	78.5	130
(10) Critically evaluate information for decision-making	4.92	0.85	73.8	305	4.90	0.78	76.8	99	5.09	0.82	78.9	76	4.84	0.90	68.5	130
(11) Focus on a task in spite of distractions	4.40	1.04	48.2	305	4.59	1.00	58.6	99	4.25	1.14	46.1	76	4.34	0.99	41.5	130
(12) Work in a team or group	4.71	1.07	62.3	305	4.95	0.97	71.7	99	4.46	1.16	53.9	76	4.68	1.06	60.0	130
(13) Work independently	5.18	0.82	82.5	303	5.13	0.70	85.7	98	5.20	0.82	82.9	76	5.22	0.90	79.8	129
(14) Use techniques, skills, & modern tools for professional success	4.86	0.87	67.5	305	4.84	0.83	69.7	99	4.83	0.97	65.8	76	4.90	0.84	66.9	130
(15) Apply knowledge and skills in real-world settings	4.52	1.08	51.0	304	4.37	1.02	43.9	98	4.49	1.11	50.0	76	4.66	1.09	56.9	130
(16) Confidence in your ability to achieve your goals	4.69	1.02	61.8	304	4.83	0.89	72.4	98	4.53	1.05	51.3	76	4.68	1.08	60.0	130
(17) Motivation to learn new things	4.98	1.09	71.7	304	5.05	1.02	76.5	98	4.92	1.15	71.1	76	4.96	1.11	68.5	130

Item scale: 1 = "Major weakness", 6 = "Major strength"; SD = Standard Deviation; % "5" or "6": Percent who selected the highest two response categories ("5" or "6")

II.5. Institutional Emphasis on Graduate Attributes

Table 10. How much emphasis did NU put on each of the following during your undergraduate studies (Scale: 1 – 6)?

	All Schools				School of Engineering				School of Humanities & Social Sciences				School of Science & Technology			
	Mean	***SD***	***% "5" or "6"***	***N***	***Mean***	***SD***	***% "5" or "6"***	***N***	***Mean***	***SD***	***% "5" or "6"***	***N***	***Mean***	***SD***	***% "5" or "6"***	***N***
(1) In-depth/sophisticated understanding of domain of study	4.34	1.01	41.5	289	4.25	0.90	36.6	93	4.39	1.10	44.9	69	4.39	1.03	43.3	127
(2) Intellectually curious, creative and open-minded	4.61	1.05	55.0	289	4.43	0.99	49.5	93	4.86	1.02	66.7	69	4.60	1.09	52.8	127
(3) Thoughtful decision-maker who knows how to involve others	4.47	1.06	49.5	287	4.45	1.02	50.5	93	4.48	1.08	49.3	69	4.49	1.08	48.8	125
(4) Able to create new opportunities	4.32	1.08	41.9	289	4.28	1.03	39.8	93	4.22	1.00	36.2	69	4.41	1.15	46.5	127
(5) Communicate effectively across cultures and languages	4.64	1.07	58.1	289	4.52	1.14	57.0	93	4.65	0.87	56.5	69	4.73	1.12	59.8	127
(6) Tolerant of people of different beliefs/values/backgrounds	4.79	1.20	64.0	289	4.75	1.18	65.6	93	4.97	1.01	69.6	69	4.72	1.30	59.8	127
(7) Develop high moral values	4.48	1.28	52.6	289	4.49	1.17	53.8	93	4.41	1.17	49.3	69	4.51	1.42	53.5	127
(8) Take a leading role in the development of your country	4.46	1.26	53.1	288	4.61	1.11	57.0	93	4.19	1.39	43.5	69	4.49	1.28	55.6	126

Item scale: 1 = "Weak emphasis", 6 = "Strong emphasis"; SD = Standard Deviation; % "5" or "6": Percent who selected the highest two response categories ("5" or "6")

II.6. Time Usage

Table 11. During the current academic year, about how many hours per week (7 days) did you spend doing the following activities?

	All Schools				School of Engineering				School of Humanities & Social Sciences				School of Science & Technology			
	Mean (hours)	***SD***	***% 26 hours or more***	***N***	***Mean***	***SD***	***% 26 hours or more***	***N***	***Mean***	***SD***	***% 26 hours or more***	***N***	***Mean***	***SD***	***% 26 hours or more***	***N***
(1) Preparing for class (studying, reading, doing homework, etc.)	16.68	8.32	18.8	287	17.31	8.25	21.5	93	17.28	7.77	16.2	68	15.88	8.65	18.3	126
(2) Participating in extra-curricular activities (club/organization)	6.30	6.83	2.8	286	8.23	7.07	3.2	93	6.54	7.23	4.5	67	4.75	6.06	1.6	126
(3) Socializing with friends	13.47	7.88	9.4	287	14.44	7.98	9.7	93	13.29	7.94	10.3	68	12.86	7.76	8.7	126
(4) Participating in physical exercises or sports	6.37	6.44	2.5	285	7.99	7.02	4.3	92	5.06	6.13	3.0	67	5.89	5.96	0.8	126
(5) Watching TV (from any devices)	4.97	7.11	3.5	284	4.75	7.32	4.3	92	5.12	6.86	3.0	67	5.05	7.14	3.2	125
(6) Reading for pleasure (books/materials unrelated to school work)	7.90	6.99	3.8	286	8.18	6.33	2.2	93	7.21	7.68	6.0	67	8.06	7.11	4.0	126
(7) Playing video/computer games	3.99	7.16	2.8	286	4.75	7.99	5.4	92	3.04	6.65	2.9	68	3.94	6.78	0.8	126
(8) Using online social networks (Facebook, Vkontakte, etc.)	11.31	8.71	9.4	287	11.27	8.58	9.7	93	12.28	9.28	13.2	68	10.81	8.51	7.1	126

Original scale: 1 = "0 hours", 8 = "More than 30 hours"; average number of hours was estimated using the midpoints corresponding to the response options; SD = Standard Deviation; % 26 hours or more: Percent who selected the highest two response categories ("26-30 hours" or "More than 30 hours").

II.7. Frequency of Academic Behaviors

Table 12. During the current academic year, about how often have you done each of the following (Scale 1 – 4)?

	All Schools				School of Engineering				School of Humanities & Social Sciences				School of Science & Technology			
	Mean	***SD***	***% "3" or "4"***	***N***	***Mean***	***SD***	***% "3" or "4"***	***N***	***Mean***	***SD***	***% "3" or "4"***	***N***	***Mean***	***SD***	***% "3" or "4"***	***N***
(1) Study or work with other students on course assignments/projects	2.88	0.79	64.2	285	3.23	0.77	79.6	93	2.55	0.78	43.3	67	2.80	0.72	64.0	125
(2) Work on research projects with faculty members	2.11	0.94	29.6	284	2.37	0.94	38.7	93	1.62	0.80	13.6	66	2.18	0.93	31.2	125
(3) Discuss your academic performance with a faculty member	2.04	0.78	21.5	284	1.84	0.66	10.8	93	2.02	0.81	21.2	66	2.20	0.80	29.6	125
(4) Discuss course topics/ideas/concepts with faculty outside class	2.12	0.79	23.9	285	2.06	0.83	22.6	93	2.07	0.78	22.4	67	2.18	0.77	25.6	125
(5) Prepare 2 or more drafts of a paper/assignment before submitting it	2.03	0.85	23.6	284	2.01	0.79	22.6	93	2.16	0.91	26.9	67	1.97	0.86	22.6	124
(6) Participate in class discussions	2.61	0.83	51.6	285	2.38	0.76	41.9	93	3.00	0.82	73.1	67	2.58	0.81	47.2	125
(7) Use NU library for academic purposes	2.71	0.93	57.2	285	2.75	0.87	60.2	93	2.85	1.05	61.2	67	2.59	0.91	52.8	125
(8) Come to class without completing readings or assignments	2.12	0.75	23.2	285	2.08	0.80	22.6	93	2.27	0.81	31.3	67	2.08	0.68	19.2	125
(9) Find course so interesting that you did more work than was required	2.22	0.81	29.1	285	2.04	0.74	22.6	93	2.31	0.87	28.4	67	2.31	0.82	34.4	125

Item scale: 1 = "Never", 4 = "Very often"; SD = Standard Deviation; % "3" or "4": Percent who selected the highest two response categories ("3" or "4")

II.8. Class Attendance

Table 13. During the current term, about how many times did you miss classes for any reason?

	All Schools				School of Engineering				School of Humanities & Social Sciences				School of Science & Technology			
	Mean	*SD*	*% "6" or more*	*N*	*Mean*	*SD*	*% "6" or more*	*N*	*Mean*	*SD*	*% "6" or more*	*N*	*Mean*	*SD*	*% "6" or more*	*N*
(1) Number of classes missed for any reason during the current term	4.64	3.35	30.0	283	4.44	3.31	30.9	94	4.22	3.34	25.4	67	5.02	3.36	32.0	122

Original scale: 1 = "None", 5 = "10 or more"; however, average number of classes missed was estimated using the midpoints corresponding to the response options; SD = Standard Deviation; % "6" or more: Percent who selected the highest two response categories ("7-9" or "10 or more").

Table 14. For each item below, please indicate if it was a major, minor, or not a reason for missing classes this term.

	All Schools				School of Engineering				School of Humanities & Social Sciences				School of Science & Technology			
	Not a reason (%)	*Minor reason* (%)	*Major reason* (%)	*N*	*Not a reason* (%)	*Minor reason* (%)	*Major reason* (%)	*N*	*Not a reason* (%)	*Minor reason* (%)	*Major reason* (%)	*N*	*Not a reason* (%)	*Minor reason* (%)	*Major reason* (%)	*N*
(1) Low quality of teaching	46.1	27.0	27.0	256	34.5	33.3	32.1	84	56.7	21.7	21.7	60	49.1	25.0	25.9	112
(2) Inconvenient class schedule	47.3	31.6	21.1	256	56.0	33.3	10.7	84	48.3	25.0	26.7	60	40.2	33.9	25.9	112
(3) Need to participate in extra-curricular activities	65.0	22.6	12.5	257	53.6	31.0	15.5	84	68.3	23.3	8.3	60	71.7	15.9	12.4	113
(4) Use class time to complete assignments from other courses	43.0	39.8	17.2	256	46.4	40.5	13.1	84	43.3	31.7	25.0	60	40.2	43.8	16.1	112
(5) Course not relevant to my interests	52.9	27.2	19.8	257	41.2	31.8	27.1	85	56.7	23.3	20.0	60	59.8	25.9	14.3	112
(6) Course too difficult for me	83.9	13.7	2.4	255	81.0	17.9	1.2	84	88.1	10.2	1.7	59	83.9	12.5	3.6	112
(7) Class attendance not required	55.1	27.7	17.2	256	58.3	17.9	23.8	84	63.3	25.0	11.7	60	48.2	36.6	15.2	112
(8) Illness	31.6	27.0	41.4	256	39.3	28.6	32.1	84	25.0	21.7	53.3	60	29.5	28.6	42.0	112

II.9. Difficulties Encountered

Table 15. How difficult did you find the following to be during your undergraduate studies (Scale: 1 – 6)?

	All Schools				School of Engineering				School of Humanities & Social Sciences				School of Science & Technology			
	Mean	***SD***	***% "5" or "6"***	***N***	***Mean***	***SD***	***% "5" or "6"***	***N***	***Mean***	***SD***	***% "5" or "6"***	***N***	***Mean***	***SD***	***% "5" or "6"***	***N***
(1) Learning course material	3.25	1.19	12.7	275	3.40	1.22	18.9	90	3.34	1.18	12.3	65	3.09	1.17	8.3	120
(2) Managing your time effectively	4.02	1.31	39.9	276	3.89	1.26	35.2	91	4.15	1.33	47.0	66	4.04	1.33	39.5	119
(3) Interacting with faculty members	2.87	1.36	12.3	277	2.98	1.35	14.3	91	3.11	1.47	16.7	66	2.67	1.29	8.3	120
(4) Living away from home	1.95	1.22	5.1	275	1.80	1.06	2.2	89	2.08	1.26	4.5	66	1.99	1.31	7.5	120
(5) Using English for academic purposes	1.99	1.12	2.5	276	2.07	1.18	3.3	90	2.11	1.18	1.5	66	1.86	1.05	2.5	120
(6) Covering (paying) living expenses	2.92	1.52	16.6	277	2.79	1.46	12.1	91	3.38	1.62	28.8	66	2.76	1.46	13.3	120
(7) Learning effectively on your own	2.76	1.33	9.4	276	2.77	1.34	8.9	90	2.82	1.37	12.1	66	2.72	1.30	8.3	120
(8) Working effectively with others	2.92	1.23	10.8	277	2.84	1.18	7.7	91	3.09	1.29	16.7	66	2.89	1.24	10.0	120
(9) Using technology for academic purposes	2.02	1.06	2.5	276	2.06	1.15	3.3	90	2.17	1.09	1.5	66	1.92	0.98	2.5	120
(10) Meeting deadlines	3.30	1.36	21.4	276	3.27	1.12	14.3	91	3.43	1.53	29.2	65	3.25	1.44	22.5	120
(11) Figuring out courses needed for degree	2.58	1.48	10.9	275	2.57	1.61	14.4	90	2.85	1.47	10.6	66	2.45	1.36	8.4	119
(12) Getting accurate info about degree requirements	2.64	1.41	10.5	275	2.72	1.43	11.1	90	2.49	1.26	6.2	65	2.66	1.48	12.5	120

Item scale: 1 = "Not at all difficult", 6 = "Very difficult"; SD = Standard Deviation; % "5" or "6": Percent who selected the highest two response categories ("5" or "6")

II.10. Writing and other Activities Completed

Table 16. During the current academic year, about how many papers, reports, or other writing tasks of the following lengths have you completed?

	All Schools				School of Engineering				School of Humanities & Social Sciences				School of Science & Technology			
	Mean	*SD*	*% "7" or more*	*N*	*Mean*	*SD*	*% "7" or more*	*N*	*Mean*	*SD*	*% "7" or more*	*N*	*Mean*	*SD*	*% "7" or more*	*N*
(1) Up to 5 pages	6.59	3.36	51.4	255	6.96	3.52	59.0	78	7.33	3.27	62.5	64	5.92	3.20	39.8	113
(2) More than 5 pages	5.19	3.47	36.1	269	7.10	3.05	57.8	90	5.78	3.25	43.8	64	3.37	2.97	14.8	115

Original scale: 1 = "None", 5 = "10 or more"; however, average number of papers was estimated using the midpoint corresponding to the response option; SD = Standard Deviation; % "4" or "5": Percent who selected the highest two response categories ("7-9" or "10 or more").

Table 17. Which of the following activities have you done so far?

	All Schools			School of Engineering			School of Humanities & Social Sciences			School of Science & Technology		
	Yes	*No*	*N*	*Yes*	*No*	*N*	*Yes*	*No*	*N*	*Yes*	*No*	*N*
(1) Participate in an internship	87.0	13.0	276	98.9	1.1	90	83.3	16.7	66	80.0	20.0	120
(2) Participate in a study abroad program	24.3	75.7	272	28.4	71.6	88	28.8	71.2	66	18.6	81.4	118
(3) Participate in a volunteer activity	71.2	28.8	274	80.7	19.3	88	74.2	25.8	66	62.5	37.5	120
(4) Hold formal leadership role in student organization/group	38.9	61.1	275	46.1	53.9	89	47.0	53.0	66	29.2	70.8	120
(5) Work with a faculty member on a research project	53.8	46.2	275	59.6	40.4	89	33.3	66.7	66	60.8	39.2	120
(6) Culminating senior experience (capstone, thesis, etc.)	63.8	36.2	276	97.8	2.2	90	33.3	66.7	66	55.0	45.0	120

II.11. Psychological Factors

Table 18. How would you rate yourself on the following factors, relative to other students in your program (Scale: 1 – 5)?

	All Schools				School of Engineering				School of Humanities & Social Sciences				School of Science & Technology			
	Mean	*SD*	*% "4" or "5"*	*N*	*Mean*	*SD*	*% "4" or "5"*	*N*	*Mean*	*SD*	*% "4" or "5"*	*N*	*Mean*	*SD*	*% "4" or "5"*	*N*
(1) Academic ability relative other students in program	3.67	1.02	56.0	275	3.67	0.99	56.7	90	3.73	0.97	56.1	66	3.65	1.06	55.5	119
(2) Motivation to succeed relative to other students in program	3.84	1.02	63.6	275	4.01	0.95	74.4	90	3.71	0.99	54.5	66	3.78	1.07	60.5	119
(3) Self-confidence	3.72	1.01	57.7	274	3.99	0.89	68.9	90	3.48	1.01	47.0	66	3.65	1.06	55.1	118

Item scale: 1 = "Bottom 10%", 5 = "Top 10%"; SD = Standard Deviation; % "4" or "5": Percent who selected the highest two response categories ("4" or "5")

Table 19. How much did you depend on the following groups for support (emotional, social, and/or academic) during your undergraduate studies (Scale: 1 – 4)?

	All Schools				School of Engineering				School of Humanities & Social Sciences				School of Science & Technology			
	Mean	*SD*	*% "3" or "4"*	*N*	*Mean*	*SD*	*% "3" or "4"*	*N*	*Mean*	*SD*	*% "3" or "4"*	*N*	*Mean*	*SD*	*% "3" or "4"*	*N*
(1) Family members	2.82	0.98	65.1	275	2.96	0.87	73.3	90	2.62	1.00	57.6	66	2.82	1.02	63.0	119
(2) Friends	2.82	0.87	67.3	275	2.86	0.79	72.2	90	2.91	0.96	71.2	66	2.75	0.88	61.3	119
(3) Classmates	2.08	0.86	31.5	273	2.23	0.84	40.0	90	1.78	0.82	18.5	65	2.14	0.88	32.2	118
(4) Faculty	2.16	0.86	33.1	275	2.12	0.80	30.0	90	2.02	0.87	28.8	66	2.26	0.90	37.8	119
(5) Administrative staff (department, school, or central level)	1.62	0.79	14.2	275	1.73	0.78	15.6	90	1.42	0.70	9.1	66	1.65	0.83	16.0	119

Item scale: 1 = "None at all", 4 = "A lot"; SD = Standard Deviation; % "3" or "4": Percent who selected the highest two response categories ("3" or "4")

Table 20. To what extent do you agree or disagree with the following statements (Scale: 1 – 6)?

	All Schools				School of Engineering				School of Humanities & Social Sciences				School of Science & Technology			
	Mean	*SD*	*% "5" or "6"*	*N*	*Mean*	*SD*	*% "5" or "6"*	*N*	*Mean*	*SD*	*% "5" or "6"*	*N*	*Mean*	*SD*	*% "5" or "6"*	*N*
(1) I feel I am a person of worth, at least on an equal plane with others	4.86	1.31	66.1	271	4.76	1.21	61.8	89	4.95	1.33	69.2	65	4.88	1.39	67.5	117
(2) I take a positive attitude toward myself	4.60	1.34	60.3	272	4.70	1.19	60.7	89	4.38	1.38	51.5	66	4.65	1.43	65.0	117
(3) On the whole, I am satisfied with myself	4.27	1.42	49.3	272	4.34	1.38	51.7	89	4.18	1.41	43.9	66	4.27	1.45	50.4	117
(4) I am able to do things as well as most other people	4.92	1.23	72.4	272	4.99	1.15	76.4	89	4.89	1.18	68.2	66	4.89	1.32	71.8	117
(5) I have high self-esteem	4.17	1.43	45.4	271	4.34	1.33	44.9	89	4.06	1.36	43.9	66	4.10	1.54	46.6	116

Item scale: 1 = "Strongly disagree", 6 = "Strongly agree"; SD = Standard Deviation; % "5" or "6": Percent who selected the highest two response categories ("5" or "6")

Table 21. Below are potential sources of stress that you may have experienced as a student. Please indicate how each has affected you during your undergraduate studies (Scale: 1 – 4).

	All Schools				School of Engineering				School of Humanities & Social Sciences				School of Science & Technology			
	Mean	*SD*	*% "3" or "4"*	*N*	*Mean*	*SD*	*% "3" or "4"*	*N*	*Mean*	*SD*	*% "3" or "4"*	*N*	*Mean*	*SD*	*% "3" or "4"*	*N*
(1) Managing the workload for your courses	2.53	0.83	51.5	272	2.43	0.81	42.7	89	2.74	0.86	65.2	66	2.48	0.81	50.4	117
(2) Personal difficulties with family or friends	2.36	1.02	44.1	272	2.16	0.92	34.8	89	2.56	1.08	53.0	66	2.40	1.04	46.2	117
(3) Balancing multiple commitments (academic, extracurricular, personal)	2.38	0.86	43.0	270	2.49	0.80	50.6	89	2.55	0.90	49.2	65	2.19	0.85	33.6	116
(4) Concerns about finances	2.31	1.00	39.9	271	2.22	0.94	36.4	88	2.42	1.11	45.5	66	2.31	0.97	39.3	117
(5) Concerns about future plans (e.g., employment, graduate studies)	3.16	0.95	77.2	272	3.30	0.84	82.0	89	3.24	1.01	80.3	66	3.01	0.98	71.8	117

Item scale: 1 = "Not a source of stress", 4 = "Very stressful"; SD = Standard Deviation; % "3" or "4": Percent who selected the highest two response categories ("3" or "4")

II.12. Post-graduation Plans

Figure 5. Primary activity after graduation

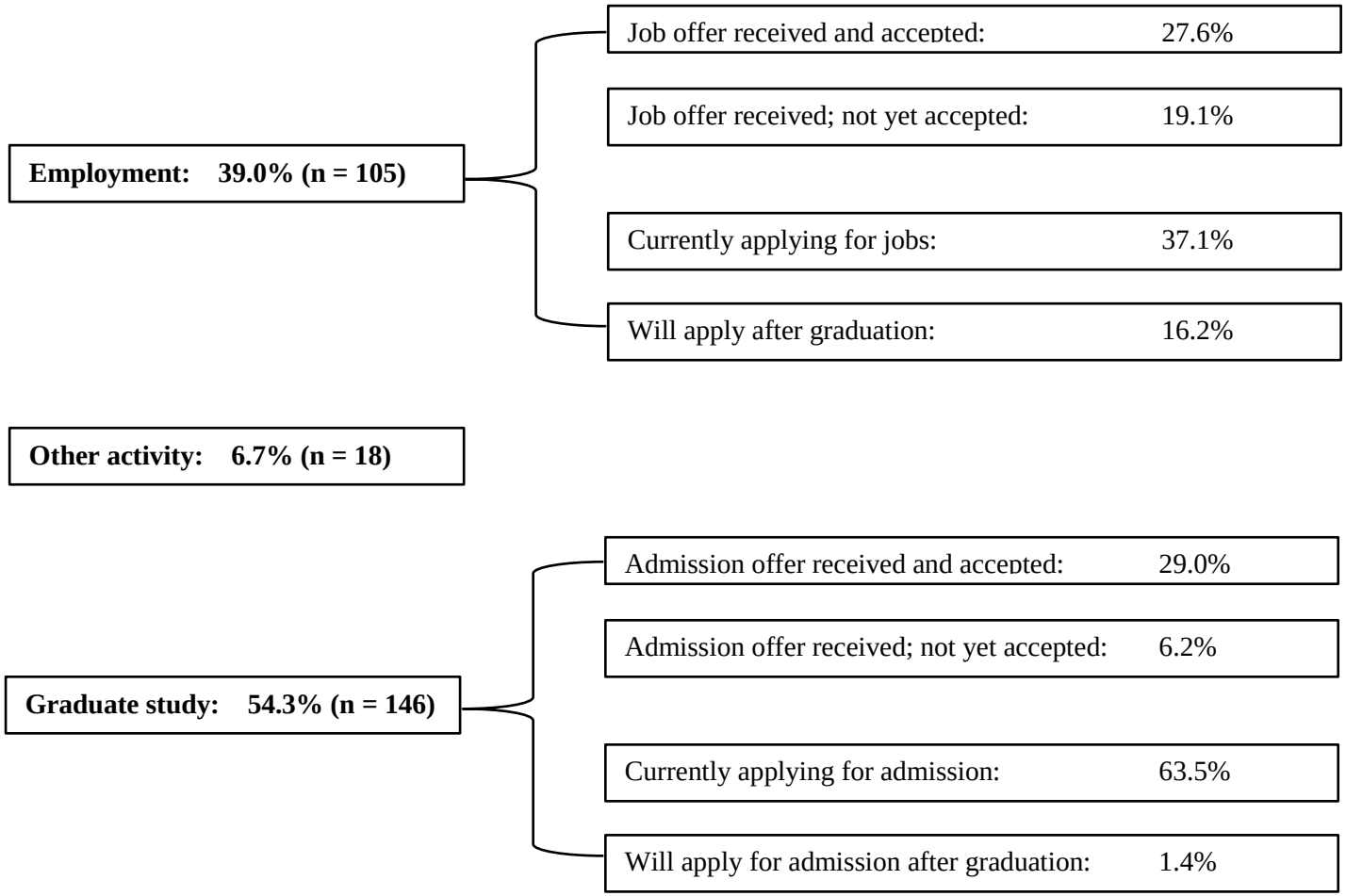


Figure 6. Prospective post-graduate degree to be pursued (N = 145)

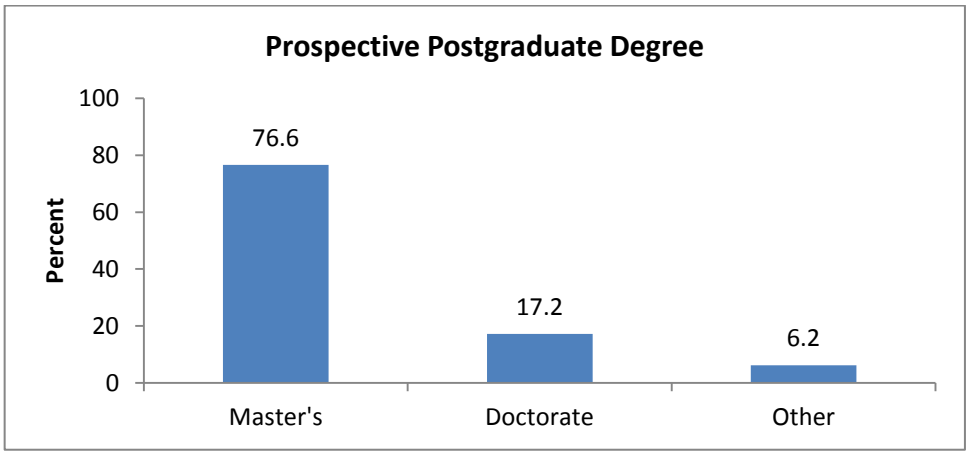


Figure 7. Prospective post-graduate field of study (N = 146)

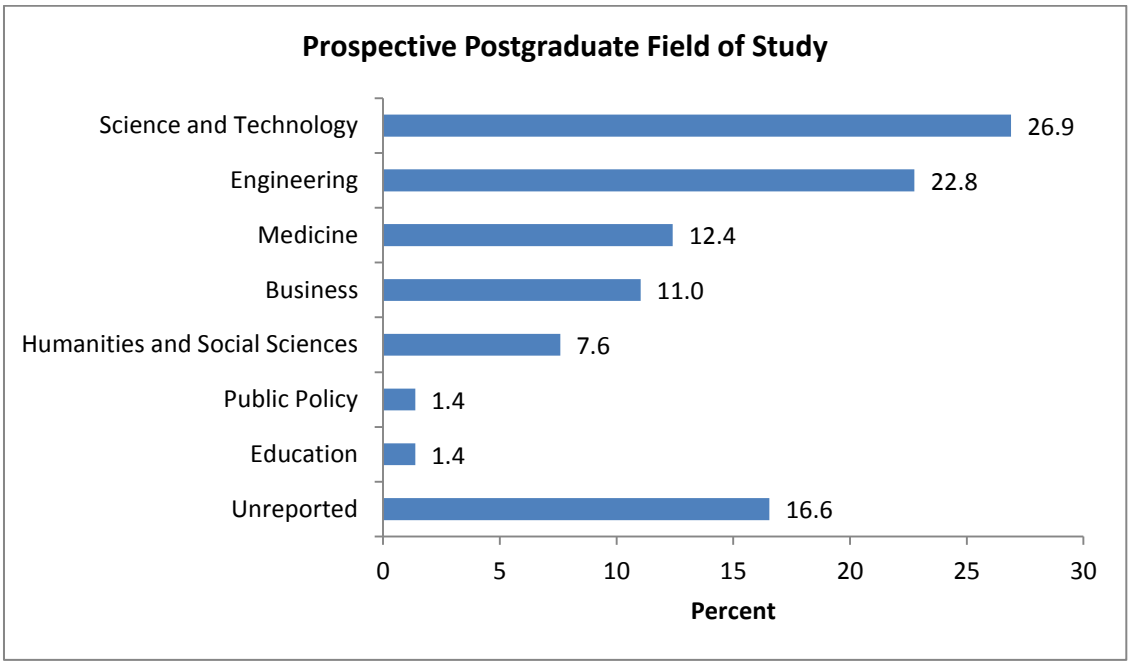


Table 22. Prospective institution for students who plan to pursue postgraduate studies (N=146)

	Count[1]	Percent
Nazarbayev University	53	36.3
New York University		
Central European University		
Gwangju Institute of Science and Technology		
King Abdullah University of Science and Technology		
Massachusetts Institute of Technology		
Okinawa Institute of Science and Technology		
Technical University of Munich		
Ulsan National Institute of Science and Technology		
Boston University		
Columbia University		
Delft University of Technology		
Duke University		
Embry-Riddle Aeronautical University		
Exeter University		
Howard University		
KTH Royal Institute of Technology		
Korea Advanced Institute of Science and Technology		
Kyung Hee University		
London School of Economics and Political Science		
Ludwig-Maximilian University of Munich		
Mannheim University		
Marquette University		
Memphis University		
National Institute of Genetics		
Nazarbayev University, King Abdullah University of Science and Technology		
Polytechnic University of Milan		
Purdue University		
RWTH Aachen University		
Rice University		
Sapienza University of Rome		
Swiss Federal Institute of Technology in Zurich		
Tallinn University of Technology		
The University of Hong Kong		
University College London		
University at Buffalo		
University of Alberta		
University of British Columbia		
University of California, Los Angeles		

[1] For confidential purposes, counts (and percentages) are displayed only when five or more students reported a particular institution.

	Count[1]	Percent
University of Central Florida		
University of Colorado Boulder		
University of Illinois at Chicago		
University of Manchester		
University of Massachusetts Amherst		
University of Montpellier		
University of Oxford		
University of South California		
University of Texas at Austin		
University of Wisconsin-Madison		
Unreported	*35*	*24.0*
Total	**146**	**100.0**

Table 23. Prospective country of destination for students who plan to pursue postgraduate studies (N=146)

	Count[2]	Percent
Kazakhstan	54	37.0
USA	27	18.5
UK	7	4.8
South Korea	6	4.1
Germany	5	3.4
Hungary		
Japan		
Canada		
Italy		
Saudi Arabia		
Estonia		
France		
Hong Kong		
Netherlands		
Sweden		
Switzerland		
Unreported	*29*	*19.9*
Total	**146**	**100.0**

[2] For confidential purposes, counts (and percentages) are displayed only when five or more students reported a particular country.

II.13. Satisfaction with Campus Resources and Services

Table 24. Please rate your level of satisfaction or dissatisfaction with each of the following University services or facilities below. If an item does not apply to you, please select "Not Applicable" (Scale: 1 – 4).

	All Schools				School of Engineering				School of Humanities & Social Sciences				School of Science & Technology			
	Mean	*SD*	*% "3" or "4"*	*N*	*Mean*	*SD*	*% "3" or "4"*	*N*	*Mean*	*SD*	*% "3" or "4"*	*N*	*Mean*	*SD*	*% "3" or "4"*	*N*
(1) Library resources and services	3.59	0.56	97.7	263	3.62	0.58	97.7	87	3.66	0.51	98.5	65	3.53	0.58	97.3	111
(2) IT resources and services	3.07	0.79	80.8	260	3.31	0.71	90.6	85	2.79	0.84	68.9	61	3.04	0.76	79.8	114
(3) Classroom and lab facilities	3.10	0.72	84.9	265	2.86	0.84	71.3	87	3.03	0.67	85.9	64	3.32	0.57	94.7	114
(4) Career and advising services	3.06	0.77	81.9	248	3.06	0.75	83.9	87	2.98	0.86	75.8	62	3.10	0.74	83.8	99
(5) Student health services	2.54	0.88	56.6	256	2.71	0.75	67.1	85	2.29	0.91	47.7	65	2.56	0.93	53.8	106
(6) Psychological counseling services	3.02	0.73	80.9	157	3.09	0.63	88.7	53	2.91	0.80	75.8	33	3.01	0.77	77.5	71
(7) Student disability services	2.97	0.72	85.3	95	3.07	0.65	89.7	29	2.62	1.12	61.9	21	3.07	0.45	93.3	45
(8) Sports Center services	3.19	0.62	91.2	217	3.27	0.60	94.9	78	3.08	0.70	88.0	50	3.18	0.59	89.9	89
(9) Food services	2.67	0.84	65.2	264	2.77	0.78	69.8	86	2.56	0.91	63.6	66	2.67	0.84	62.5	112
(10) Student housing facilities	3.08	0.89	80.2	253	3.31	0.86	85.7	84	2.93	0.93	77.0	61	2.99	0.86	77.8	108
(11) Parking services	2.22	1.02	45.5	121	2.36	0.99	48.5	33	1.76	0.90	24.2	33	2.42	1.03	56.4	55
(12) Safety and security on campus	3.00	0.87	80.4	250	3.10	0.85	85.5	83	2.88	0.88	75.9	58	2.98	0.88	78.9	109

Item scale: 1 = "Very dissatisfied", 4 = "Very satisfied"; SD = Standard Deviation; % "3" or "4": Percent who selected the highest two response categories ("3" or "4")

II.14. Employment during the Academic Year

Figure 8. Percent of students who worked for pay at any point during the academic year

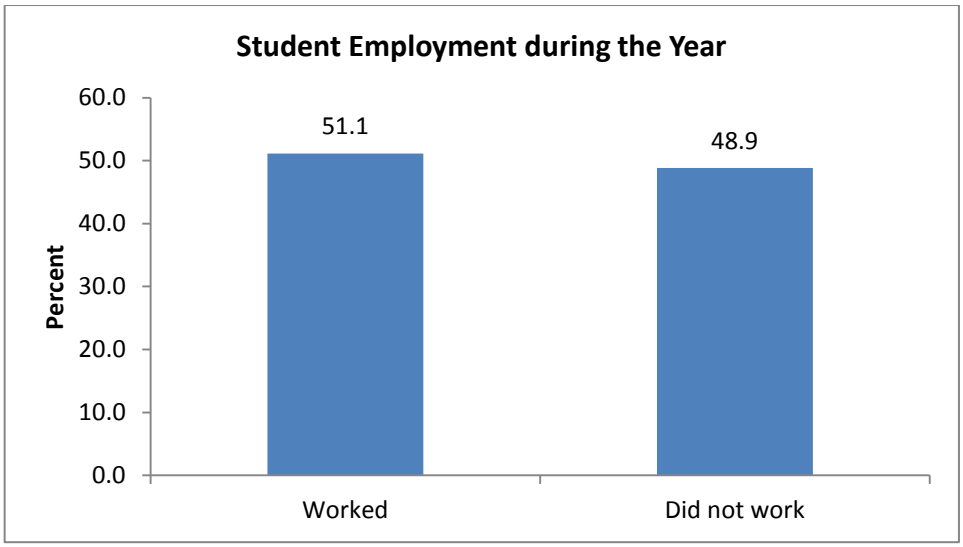
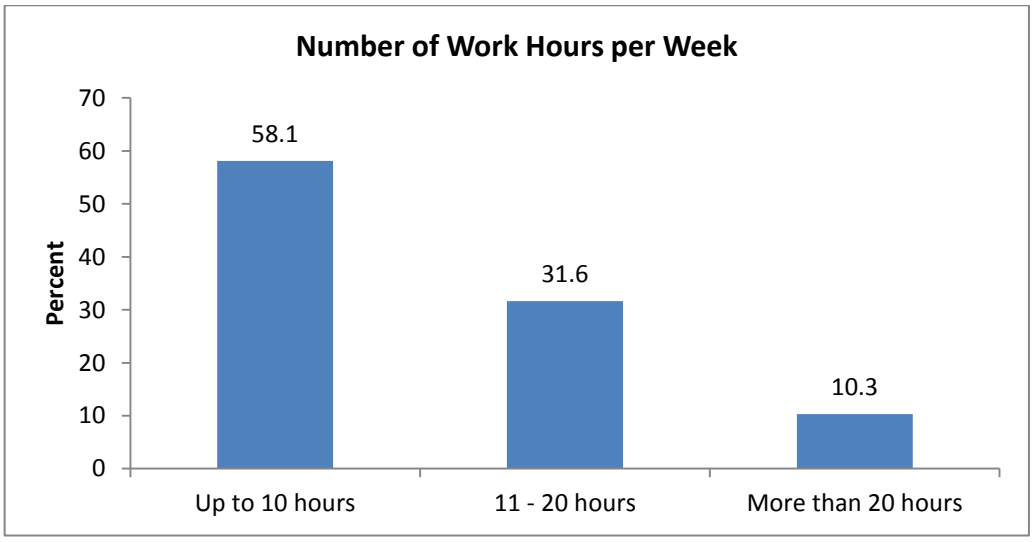


Figure 9. Number of work hours per week (for student who worked for pay during the year)



II.15. Individual Development

Table 25. How well has NU met your needs in each of the following areas (Scale: 1 – 5)?

	All Schools				School of Engineering				School of Humanities & Social Sciences				School of Science & Technology			
	Mean	***SD***	***% "4" or "5"***	***N***	***Mean***	***SD***	***% "4" or "5"***	***N***	***Mean***	***SD***	***% "4" or "5"***	***N***	***Mean***	***SD***	***% "4" or "5"***	***N***
(1) Career preparation (curricular and extra-curricular activities)	3.30	0.88	39.9	268	3.48	0.82	48.9	88	3.06	0.86	23.1	65	3.30	0.91	42.6	115
(2) Intellectual growth	4.05	0.78	78.7	268	3.99	0.77	77.3	88	4.26	0.80	81.5	65	3.97	0.78	78.3	115
(3) Personal growth	3.99	0.83	72.8	268	4.05	0.83	75.0	88	4.09	0.84	78.5	65	3.88	0.83	67.8	115

Item scale: 1 = "Very inadequately", 5 = "Very well"; SD = Standard Deviation; % "4" or "5": Percent who selected the highest two response categories ("4" or "5")

II.16. Narrative Comments

Figure 10. Top themes with respect to what NU could have done/changed to improve students' experience

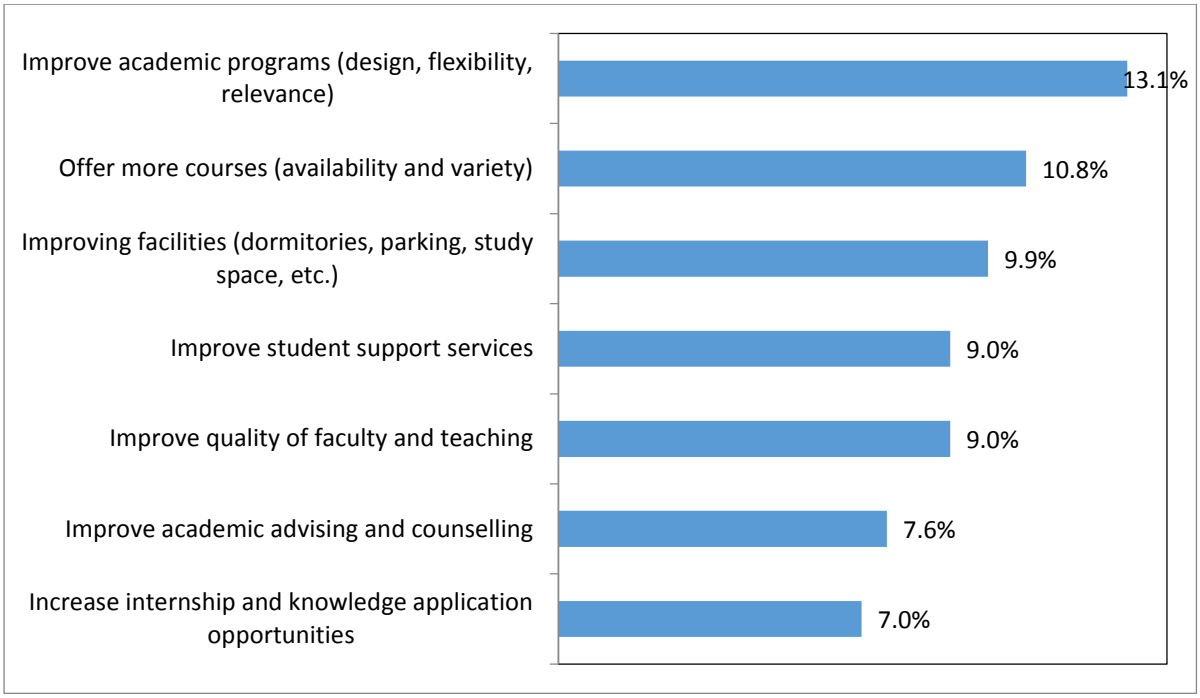


Figure 11. Top themes with respect to positive, meaningful interactions with faculty members

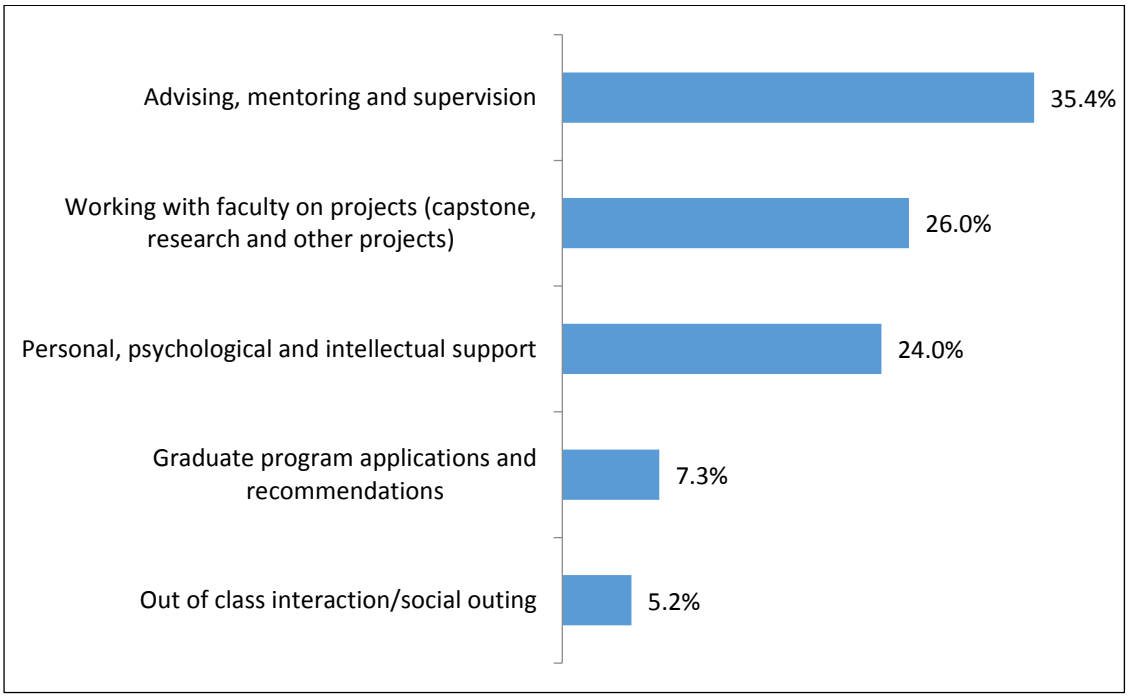
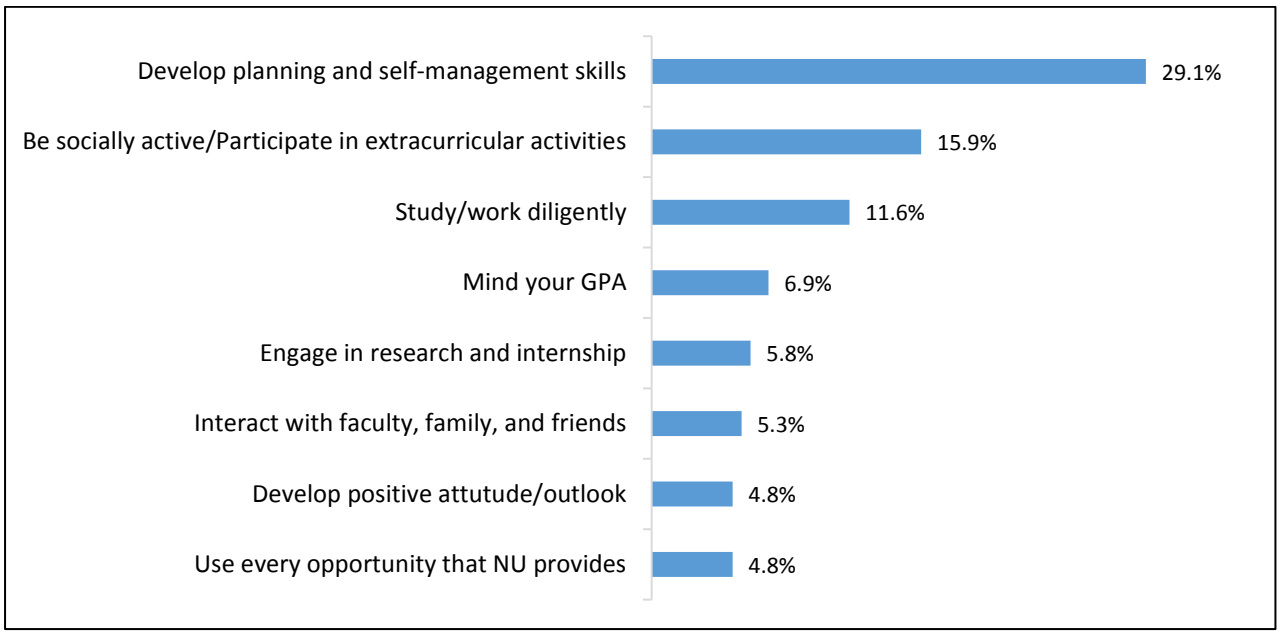


Figure 12. Top themes with respect to advice to new Nazarbayev University students



APPENDICES

A. Dealing with Non-Response Bias

Analysis of student participation in the survey revealed small (but not insignificant) differences between engineering and non-engineering students (see Table 2), male and female students (see Table 3), and high achieving and low-achieving students (see Table 4). Female students were more likely to participate in the survey compared to their male counterparts. Engineering students were less likely to participate compared to non-engineering students. Based on students' cumulative GPA in the previous fall semester, high achieving students were more likely to participate in the survey compared to low-achieving students.

Differences in response rates across sub-groups can lead to non-response bias, particularly if these sub-groups also differ on survey variables (Kalton, 1983; Pike, 2008). In fact, we also found differences in student perceptions on some of the key indicators created from survey items, particularly relative to students' gender and level of academic performance. Male and female students differed on 10 out of the 13 composite indicators created from survey items, engineering and non-engineering students differed on one composite indicator, and high-achieving and low-achieving students differed on nine composite indicators. Weighting adjustments have been recommended as a solution to non-response bias. In this analysis, we computed and used weights (based on gender, school, and academic performance) to adjust for non-response. We then compared weighted and unweighted results but found negligible differences between the two sets of results. Therefore, we retained and reported unweighted statistics.

B. Limitations: Precision of Survey Results

Information collected through surveys is almost always prone to error. There are different sources of survey error, including sampling error, coverage error, non-response error, measurement error (e.g., Biemer, Groves, Lyberg, Mathiowetz, & Sudman, 1991; Braverman, 1996; Dillman, 2007; Fowler, 2008; Groves, 1989; Groves et al., 2009; Krosnick, 1991; Krosnick, Narayan, & Smith, 1996).

Sampling error was not a concern in this study because the Entering Student Survey was administered to all potential graduating students (and not to a sample of students). Likewise, coverage error was not a concern because all members of the target population had equal chance of being included in the study. Results of our analyses also suggest non-response error was not likely to be a major concern in this study. Although we found differences due to school, gender, and level of academic performance in survey response rates and in some of the survey measures, we determined that adjusting for non-response bias was unnecessary given that summary statistics did not change substantially before and after non-response adjustment (see discussion on non-response bias in *Appendix A*).

Measurement error, however, is always a threat in survey research. This error "occurs when a respondent's answer to a survey question is inaccurate, imprecise, or cannot be compared in any useful way to other respondents' answers" (Dillman, 2007, p. 9). Measurement error can result from different sources: the wording or organization of the survey instrument, the respondent, the mode of survey administration, and the interviewer (Braverman, 1996). This last source (interviewer) does not apply to the Entering Student Survey because this survey is self-administered. It is, however, important to recognize that students' responses may have been affected by the survey instrument itself or from respondents' inherent characteristics. With respect to the survey instrument, it is possible for a response to be inaccurate or imprecise because the question was unclear to the respondent or because of issues related to the structure or sequence of the questions (Braverman, 1996). We attempted to minimize this type of error by paying closer attention to the survey design stage (e.g., we adapted some of the questions from existing survey instruments and solicited feedback from multiple stakeholders. With respect to the respondent error, it is possible that some students misreported perceptions and/or facts. For example, a respondent may agree with an assertion in a survey item without regard to content—a phenomenon described as *acquiescence* (Krosnick et al., 1996) and which can be due, among other things, to a tendency to be "polite and agreeable" (Krosnick, 2000). The respondent may also select the response option that appears to be reasonable or acceptable, instead of producing the mental effort necessary to provide an optimal response—a phenomenon called *satisficing* (Krosnick, 1991; Krosnick et al., 1996). Therefore, the precision of the results of this survey may be limited by some of the sources of measurement error discussed here.

Finally, the precision of survey estimates may be affected by item non-response (the percentage of individuals who did not respond to a specific survey question), given that it is unlikely that all participant will respond to every item on the survey. In this survey, item non-response ranged from 0% to 19.3% for close-ended questions that applied to all participants, the survey yielded a high completion rate. According to standards by the American Association for Public Opinion Research (2008), a survey participant responding to more than 80% of applicable questions yields a "complete" rather than a "partial" survey response. In the present study, 85%% of the participants responded to more than 80% of the questions on the survey. It is therefore unlikely that item non-response will have a drastic effect on the precision of survey estimates.

C. Computing Composite Indicators

Computation of composite scores involved Exploratory Factor Analysis, reliability analysis, use of the Linear Stretch Method (de Jonge, Veenhoven, & Arends, 2014) to transform original scales to a scale from 0 to 100, and computation of composite scores (on the new scale) by averaging a respondent's scores on relevant scale items, provided that the respondent answered to at least half of the items on that scale. Table 26 displays the composite scores created, along with the number of items and the scale reliability coefficient (a measure of the internal reliability/consistency of scale items). Reliability coefficients were high, and only three coefficients did not meet the 0.7 level suggested by Nunnaly (1978).

Table 26. Composite scores created, number of items used, and scale reliability

Survey Topic	Number of items on the scale[1]	Scale reliability (Cronbach's alpha)	Item listing
(1) Perception of NU (institutional level)	8	0.85	Table 6
(2) Program satisfaction	9	0.90	Table 7
(3) Curricular preparation (career and postgraduate studies)	2	0.66*	Table 8
(4) Development of skills and competencies	17	0.91	Table 9
(5) Graduate attribute emphasis	8	0.89	Table 10
(6) Frequency of academic behaviors	10	0.70	Table 12**
(7) Level of difficulties encountered	12	0.83	Table 15
(8) Dependence on others (family, friends, faculty, staff)	5	0.73	Table 19
(9) Self-concept	3	0.75	Table 18
(10) Self-esteem	5	0.91	Table 20
(11) Stress level	5	0.66*	Table 21
(12) Satisfaction with campus resources and services	12	0.81	Table 24
(13) Individual development	3	0.73	Table 25

* These values are slightly below the 0.70 level widely used in empirical research. In his earlier work, Nunnaly (1967) had indicated that values ranging from 0.50 to 0.60 were acceptable for early research stages.
** In addition to frequency of certain behaviors, the analyses also included the number of hours per week the student spent preparing for classes and the number of times the student misses classes during the term (this last variable was reverse-coded so that students who missed few classes were assigned higher scores).

[1] Results of Exploratory Factor Analysis revealed that perception of NU, program satisfaction, curricular preparation, graduate attribute emphasis, self-concept, self-esteem, stress level, satisfaction with campus resources and services, and individual development were unidimensional. In other words, items on these scales loaded on a single factor. Although we also retained a single factor for skills and competencies, frequency of academic behavior, level of difficulties, and dependence on others, there was some evidence that these scales may measure more than one construct or dimension. We will examine the factor structure of these scales after we collect additional data.

D. Composite Indicator Summary Statistics by Program

Table 27. Composite indicators: Summary statistics by program (School of Engineering)

Program (SEng)	Composite indicator (scale: 0 - 100)	Mean	SD	Median	Min.	Max.	N
Chemical Engineering	Perception of NU	72.30	15.29	77.50	40.00	100.00	25
	Satisfaction with program	59.42	13.90	57.78	26.67	100.00	27
	Curricular preparation (for career & postgraduate study)	57.87	18.06	62.50	25.00	75.00	27
	Development of skills and competencies	74.98	8.96	75.29	57.50	95.29	27
	Institutional emphasis on graduate attributes	71.20	16.09	70.00	27.50	100.00	25
	Frequency of academic behaviors	47.76	12.48	47.50	19.88	73.33	25
	Level of difficulties encounted	37.94	12.46	36.52	20.00	66.67	24
	Self-concept (perception of own competence relative to others)	74.65	18.30	75.00	33.33	100.00	24
	Dependence on others (family, friends, faculty, staff)	47.78	18.20	53.33	20.00	73.33	24
	Self-esteem (perception of own worth relative to 'ideal' self)	67.48	21.65	72.00	0.00	96.00	23
	Stress level	53.26	14.88	53.33	33.33	86.67	23
	Satisfaction with campus resources and services	71.28	15.55	70.37	41.67	100.00	23
	Individual development (career prep and intellectual/personal growth)	69.57	16.01	75.00	33.33	100.00	23
Civil Engineering	Perception of NU	66.45	18.07	70.71	30.00	92.50	20
	Satisfaction with program	55.38	15.85	56.67	22.22	84.44	20
	Curricular preparation (for career & postgraduate study)	62.50	12.50	62.50	37.50	87.50	19
	Development of skills and competencies	71.58	11.38	73.53	40.00	85.88	20
	Institutional emphasis on graduate attributes	72.22	13.42	71.25	40.00	90.00	18
	Frequency of academic behaviors	45.53	9.38	45.00	24.88	58.57	18
	Level of difficulties encounted	40.49	15.96	36.67	18.33	71.67	17
	Self-concept (perception of own competence relative to others)	68.14	16.20	66.67	41.67	100.00	17
	Dependence on others (family, friends, faculty, staff)	52.94	16.58	60.00	20.00	80.00	17

	Self-esteem (perception of own worth relative to 'ideal' self)	72.24	20.52	72.00	28.00	100.00	17
	Stress level	52.16	24.18	60.00	0.00	93.33	17
	Satisfaction with campus resources and services	69.83	10.91	73.33	46.67	86.11	17
	Individual development (career prep and intellectual/personal growth)	75.98	15.83	75.00	41.67	100.00	17
Electrical & Electronic Engineering	Perception of NU	75.86	16.06	77.50	32.50	100.00	39
	Satisfaction with program	59.92	17.21	57.78	20.00	100.00	39
	Curricular preparation (for career & postgraduate study)	60.53	20.04	62.50	0.00	100.00	38
	Development of skills and competencies	76.81	12.00	77.65	40.00	100.00	39
	Institutional emphasis on graduate attributes	67.50	18.60	70.00	0.00	100.00	37
	Frequency of academic behaviors	47.90	14.63	47.86	21.19	84.17	37
	Level of difficulties encounted	30.57	16.00	30.00	3.33	70.00	37
	Self-concept (perception of own competence relative to others)	74.31	17.75	75.00	33.33	100.00	36
	Dependence on others (family, friends, faculty, staff)	43.15	16.60	46.67	6.67	80.00	36
	Self-esteem (perception of own worth relative to 'ideal' self)	74.89	21.61	80.00	0.00	100.00	36
	Stress level	49.07	22.38	53.33	0.00	93.33	36
	Satisfaction with campus resources and services	66.97	16.20	69.72	14.81	96.67	34
	Individual development (career prep and intellectual/personal growth)	70.95	19.21	75.00	33.33	100.00	35
Mechanical Engineering	Perception of NU	66.25	17.37	66.25	30.00	92.50	14
	Satisfaction with program	64.27	13.53	62.22	35.56	84.44	13
	Curricular preparation (for career & postgraduate study)	66.35	14.78	62.50	37.50	87.50	13
	Development of skills and competencies	68.60	11.91	70.59	49.41	84.71	13
	Institutional emphasis on graduate attributes	67.88	9.73	67.50	52.50	85.00	13
	Frequency of academic behaviors	42.53	16.31	44.40	20.95	74.64	13
	Level of difficulties encounted	37.35	15.58	40.00	11.67	62.22	13
	Self-concept (perception of own competence relative to others)	67.31	28.76	83.33	16.67	100.00	13
	Dependence on others (family, friends, faculty, staff)	41.54	23.28	40.00	0.00	80.00	13
	Self-esteem (perception of own worth relative to 'ideal' self)	75.08	21.30	76.00	24.00	100.00	13
	Stress level	48.72	14.50	46.67	26.67	73.33	13

	Satisfaction with campus resources and services	69.34	13.13	74.07	48.15	85.19	13
	Individual development (career prep and intellectual/personal growth)	66.67	12.27	66.67	41.67	83.33	13

Table 28. Composite indicators: Summary statistics by program (School of Humanities & Social Sciences)

Program (SHSS)	Composite indicator (scale: 0 - 100)	Mean	SD	Median	Min.	Max.	N
Economics	Perception of NU	68.22	18.76	72.50	27.50	100.00	38
	Satisfaction with program	62.22	17.93	60.00	28.89	100.00	37
	Curricular preparation (for career & postgraduate study)	56.76	18.77	50.00	25.00	100.00	37
	Development of skills and competencies	73.75	12.05	72.94	41.18	97.65	35
	Institutional emphasis on graduate attributes	72.27	14.41	70.00	30.00	100.00	33
	Frequency of academic behaviors	43.27	15.10	43.04	13.69	79.40	32
	Level of difficulties encounted	38.40	15.40	38.33	0.00	71.67	31
	Self-concept (perception of own competence relative to others)	69.09	21.75	75.00	33.33	100.00	31
	Dependence on others (family, friends, faculty, staff)	35.05	21.08	40.00	0.00	73.33	31
	Self-esteem (perception of own worth relative to 'ideal' self)	67.26	24.55	72.00	0.00	100.00	31
	Stress level	51.18	20.40	53.33	6.67	100.00	31
	Satisfaction with campus resources and services	66.07	13.38	66.67	37.04	100.00	30
	Individual development (career prep and intellectual/personal growth)	71.39	17.05	66.67	33.33	100.00	30
Political Science & Int. Relations	Perception of NU	74.91	17.11	77.50	35.00	100.00	29
	Satisfaction with program	66.02	17.71	64.44	20.00	100.00	29
	Curricular preparation (for career & postgraduate study)	57.33	18.46	50.00	25.00	100.00	29
	Development of skills and competencies	72.40	12.63	71.18	43.53	100.00	28
	Institutional emphasis on graduate attributes	70.19	16.29	70.00	40.00	100.00	26
	Frequency of academic behaviors	50.77	15.28	49.35	27.86	100.00	26
	Level of difficulties encounted	40.30	15.34	40.00	5.00	68.33	26

	Self-concept (perception of own competence relative to others)	61.54	19.59	58.33	25.00	100.00	26
	Dependence on others (family, friends, faculty, staff)	43.33	21.77	36.67	0.00	100.00	26
	Self-esteem (perception of own worth relative to 'ideal' self)	71.54	20.72	72.00	0.00	100.00	26
	Stress level	62.24	20.49	60.00	20.00	100.00	26
	Satisfaction with campus resources and services	58.97	16.27	62.96	27.78	91.67	25
	Individual development (career prep and intellectual/personal growth)	67.95	15.93	70.83	33.33	100.00	26
Other SHSS majors	Perception of NU	62.31	14.27	60.00	37.50	82.50	13
	Satisfaction with program	62.96	17.54	62.22	37.78	91.11	14
	Curricular preparation (for career & postgraduate study)	58.93	17.28	62.50	25.00	87.50	14
	Development of skills and competencies	67.78	11.31	71.76	47.06	81.18	13
	Institutional emphasis on graduate attributes	64.75	9.09	62.50	55.00	85.00	10
	Frequency of academic behaviors	45.63	10.87	45.71	32.38	67.62	9
	Level of difficulties encounted	32.78	11.58	36.67	16.67	48.33	9
	Self-concept (perception of own competence relative to others)	68.52	13.03	75.00	50.00	83.33	9
	Dependence on others (family, friends, faculty, staff)	36.30	17.03	33.33	13.33	66.67	9
	Self-esteem (perception of own worth relative to 'ideal' self)	73.78	21.18	72.00	44.00	100.00	9
	Stress level	60.74	20.12	66.67	33.33	93.33	9
	Satisfaction with campus resources and services	56.24	13.81	61.11	33.33	70.37	9
	Individual development (career prep and intellectual/personal growth)	72.22	13.82	66.67	50.00	91.67	9

Table 29. Composite indicators: Summary statistics by program (School of Science & Technology)

Program (SST)	Composite indicator (scale: 0 - 100)	Mean	SD	Median	Min.	Max.	N
Biological Sciences	Perception of NU	71.07	21.51	76.25	17.50	100.00	42
	Satisfaction with program	60.37	17.28	57.78	31.11	91.11	42
	Curricular preparation (for career & postgraduate study)	54.76	21.38	50.00	0.00	100.00	42
	Development of skills and competencies	71.09	17.58	71.18	16.47	100.00	40
	Institutional emphasis on graduate attributes	67.50	20.74	67.50	5.00	100.00	39
	Frequency of academic behaviors	50.85	15.40	49.88	21.43	79.63	39
	Level of difficulties encounted	36.20	15.03	35.00	5.00	68.33	39
	Self-concept (perception of own competence relative to others)	66.78	20.79	66.67	16.67	100.00	38
	Dependence on others (family, friends, faculty, staff)	42.28	17.62	40.00	0.00	80.00	38
	Self-esteem (perception of own worth relative to 'ideal' self)	65.79	29.89	72.00	0.00	100.00	38
	Stress level	57.19	19.64	56.67	13.33	100.00	38
	Satisfaction with campus resources and services	60.84	13.50	59.26	33.33	92.59	37
	Individual development (career prep and intellectual/personal growth)	68.24	15.94	66.67	25.00	100.00	37
Chemistry	Perception of NU	64.72	30.73	75.00	0.00	97.50	9
	Satisfaction with program	65.68	18.29	64.44	42.22	93.33	9
	Curricular preparation (for career & postgraduate study)	61.11	11.60	62.50	50.00	75.00	9
	Development of skills and competencies	66.54	11.21	67.06	47.06	78.82	9
	Institutional emphasis on graduate attributes	65.00	12.75	65.00	47.50	80.00	8
	Frequency of academic behaviors	46.41	12.08	44.70	33.45	68.33	8
	Level of difficulties encounted	46.63	16.76	39.85	33.33	80.00	8
	Self-concept (perception of own competence relative to others)	54.17	12.60	54.17	41.67	75.00	8
	Dependence on others (family, friends, faculty, staff)	35.83	24.93	30.00	0.00	73.33	8
	Self-esteem (perception of own worth relative to 'ideal' self)	62.00	26.27	76.00	8.00	84.00	8
	Stress level	49.79	16.96	50.00	26.67	80.00	8
	Satisfaction with campus resources and services	77.87	16.21	77.08	54.17	100.00	6

	Individual development (career prep and intellectual/personal growth)	64.29	9.27	66.67	50.00	75.00	7
Computer Science	Perception of NU	76.00	19.91	80.00	40.00	100.00	20
	Satisfaction with program	74.44	19.50	75.56	31.11	100.00	20
	Curricular preparation (for career & postgraduate study)	63.13	20.47	50.00	37.50	100.00	20
	Development of skills and competencies	76.28	13.14	72.94	57.65	100.00	19
	Institutional emphasis on graduate attributes	76.18	18.02	75.00	35.00	100.00	19
	Frequency of academic behaviors	44.27	12.98	44.64	23.45	70.60	18
	Level of difficulties encounted	28.55	15.29	27.80	0.00	58.33	18
	Self-concept (perception of own competence relative to others)	63.89	21.77	62.50	33.33	100.00	18
	Dependence on others (family, friends, faculty, staff)	43.61	22.97	46.67	6.67	86.67	18
	Self-esteem (perception of own worth relative to 'ideal' self)	74.22	23.13	84.00	32.00	100.00	18
	Stress level	44.07	21.47	40.00	13.33	93.33	18
	Satisfaction with campus resources and services	68.75	18.12	66.67	36.11	100.00	17
	Individual development (career prep and intellectual/personal growth)	70.37	22.73	70.83	25.00	100.00	18
Mathematics	Perception of NU	77.98	13.48	77.50	55.00	100.00	37
	Satisfaction with program	70.87	15.01	71.11	40.00	100.00	37
	Curricular preparation (for career & postgraduate study)	62.16	18.04	62.50	12.50	100.00	37
	Development of skills and competencies	73.59	12.24	72.94	44.71	100.00	36
	Institutional emphasis on graduate attributes	72.64	17.99	72.50	30.00	100.00	35
	Frequency of academic behaviors	43.08	15.02	39.29	18.10	82.74	35
	Level of difficulties encounted	35.56	14.78	35.83	0.00	66.67	30
	Self-concept (perception of own competence relative to others)	69.72	24.12	75.00	16.67	100.00	30
	Dependence on others (family, friends, faculty, staff)	46.67	22.56	46.67	0.00	100.00	30
	Self-esteem (perception of own worth relative to 'ideal' self)	75.59	20.29	80.00	20.00	100.00	29
	Stress level	44.14	17.94	46.67	6.67	73.33	29
	Satisfaction with campus resources and services	70.10	14.69	66.67	41.67	100.00	29
	Individual development (career prep and	65.80	15.16	66.67	50.00	91.67	29

	intellectual/personal growth)						
Physics	Perception of NU	74.81	10.83	80.00	57.50	87.50	11
	Satisfaction with program	78.38	13.99	84.44	42.22	88.89	11
	Curricular preparation (for career & postgraduate study)	72.73	21.52	75.00	37.50	100.00	11
	Development of skills and competencies	74.22	9.92	78.82	60.00	88.24	11
	Institutional emphasis on graduate attributes	78.18	14.10	80.00	55.00	100.00	11
	Frequency of academic behaviors	51.95	12.51	52.80	34.76	75.12	10
	Level of difficulties encounted	19.33	17.48	10.00	0.00	51.67	10
	Self-concept (perception of own competence relative to others)	80.83	23.26	87.50	33.33	100.00	10
	Dependence on others (family, friends, faculty, staff)	43.33	18.66	40.00	13.33	73.33	10
	Self-esteem (perception of own worth relative to 'ideal' self)	72.80	17.87	76.00	36.00	92.00	10
	Stress level	44.00	22.04	43.33	6.67	80.00	10
	Satisfaction with campus resources and services	66.25	10.44	66.67	51.85	88.89	10
	Individual development (career prep and intellectual/personal growth)	73.33	19.95	75.00	41.67	100.00	10
Robotics & Mechatronics	Perception of NU	71.54	20.55	78.57	37.50	100.00	16
	Satisfaction with program	69.13	15.46	63.47	44.44	100.00	16
	Curricular preparation (for career & postgraduate study)	53.91	20.27	50.00	0.00	75.00	16
	Development of skills and competencies	68.71	13.08	68.24	50.59	97.65	15
	Institutional emphasis on graduate attributes	66.83	20.69	62.50	20.00	100.00	15
	Frequency of academic behaviors	39.02	17.63	34.52	19.52	76.31	15
	Level of difficulties encounted	33.22	11.05	36.67	15.00	50.00	15
	Self-concept (perception of own competence relative to others)	66.67	20.17	66.67	25.00	100.00	15
	Dependence on others (family, friends, faculty, staff)	48.89	22.21	46.67	13.33	100.00	15
	Self-esteem (perception of own worth relative to 'ideal' self)	76.00	26.11	86.00	24.00	100.00	14
	Stress level	48.57	16.63	46.67	26.67	86.67	14
	Satisfaction with campus resources and services	68.79	16.00	66.67	40.00	96.67	13
	Individual development (career preparation and intellectual/personal growth)	66.07	18.33	66.67	41.67	100.00	14

REFERENCES

Biemer, P. P., Groves, R. M., Lyberg, L. E., Mathiowetz, N. A., & Sudman, S. (Eds.). (1991). *Measurement errors in surveys*. Hoboken, NJ, USA: John Wiley & Sons.

Braverman, M. T. (1996). Sources of survey error: Implications for evaluation studies. *New Directions for Evaluation, 1996*(70), 17-28. doi:10.1002/ev.1032

de Jonge, T., Veenhoven, R., & Arends, L. (2014). Homogenizing Responses to Different Survey Questions on the Same Topic: Proposal of a Scale Homogenization Method Using a Reference Distribution. *Social Indicators Research, 117*(1), 275-300. doi:10.1007/s11205-013-0335-6

Dillman, D. A. (2007). *Mail and internet surveys: The tailored design method* (2nd ed.). Hoboken, New Jersey: John Wiley & Sons.

European Union. (2015). *ECTS users' guide 2015*. Luxembourg: Publications Office of the European Union.

Fowler, F. J. (2008). *Survey research methods* (4th Ed.). Los Angeles: Sage.

Groves, R. M. (1989). *Survey errors and survey costs*. New York: Wiley.

Groves, R. M., Fowler, F. J. J., Couper, M. P., Lepkowski, J. M., Singer, E., & Tourangeau, R. (2009). *Survey methodology*. Hoboken, New Jersey, USA: John Wiley & Sons.

Kalton, G. (1983). *Compensation for missing survey data*. Retrieved from Ann Arbor:

Krosnick, J. A. (1991). Response strategies for coping with the cognitive demands of attitude measures in surveys. *Applied Cognitive Psychology, 5*(3), 213-236. doi:10.1002/acp.2350050305

Krosnick, J. A. (2000). The threat of satisficing in surveys: The shortcuts respondents take in answering questions. *Survey Methods Newsletter, 20*(1), 4-8.

Krosnick, J. A., Narayan, S., & Smith, W. R. (1996). Satisficing in surveys: Initial evidence. *New Directions for Evaluation, 1996*(70), 29-44. doi:10.1002/ev.1033

Nunnaly, J. (1967). *Psychometric theory*. New York: McGraw-Hill.

Nunnaly, J. (1978). *Psychometric theory* (2nd ed.). New York: McGraw-Hill.

Pike, G. R. (2008). Using Weighting Adjustments to Compensate for Survey Nonresponse. *Research in Higher Education, 49*(2), 153-171. doi:10.1007/s11162-007-9069-0

The American Association for Public Opinion Research. (2008). *Standard definitions: Final dispositions of case codes and outcome rates for surveys* (5th ed.). Lenexa, Kansas: AAPOR.