

Appendix 4-C APPLES1 Instrument

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ACADEMIC PATHWAYS OF PEOPLE LEARNING ENGINEERING SURVEY (APPLES)

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QUESTIONS MARKED WITH A * ARE REQUIRED.

***1. What school are you currently attending?**

- [NAME OF INSTITUTION]
- Other:
- I prefer not to answer*

***2. What is your current academic standing?**

- Freshman
- Sophomore
- Junior
- Senior
- Fifth year senior or more
- Graduate student
- Other:
- I prefer not to answer*

***3. When you entered this institution were you:**

- A first-time college student
- Returning or non-traditional college student
- A transfer student from a two-year institution
- A transfer student from a four-year institution
- A transfer student from an institution that participates in a 3 + 2 engineering program
- I prefer not to answer*

***4. What year do you expect to complete your undergraduate degree?**

- 2007 or earlier
- 2008
- 2009
- 2010
- 2011
- 2012 or later
- I prefer not to answer*

***5. What were you most interested in majoring in when you first came to university?
(Choose one)**

- Arts and Humanities
- Engineering
- Math and Natural Sciences
- Physical Sciences
- Social Sciences
- Other:
- I prefer not to answer*

***6. What is/are your current major(s) or intended major(s)? (Mark all that apply)**

- Aerospace Engineering
- Chemical Engineering
- Civil Engineering
- Computer Science/Engineering
- Electrical Engineering
- Industrial Engineering
- Materials and Metallurgical Engineering
- Mechanical Engineering

- Arts and Humanities
- Math and Natural Sciences
- Physical Sciences
- Social Sciences
- Other
- I prefer not to answer*

***7. Do you intend to complete a major in engineering?**

- Definitely Not
- Probably Not
- Not Sure
- Probably Yes
- Definitely Yes
- I prefer not to answer*

***8. We are interested in knowing why you are or were studying engineering. Please indicate below the extent to which the following reasons apply to you:**

	Not a Reason	Minimal Reason	Moderate Reason	Major Reason	<i>I prefer not to answer</i>
Technology plays an important role in solving society's problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Engineers make more money than most other professionals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My parent(s) would disapprove if I chose a major other than engineering	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Engineers have contributed greatly to fixing problems in the world	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Engineers are well paid	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My parent(s) want me to be an engineer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
An engineering degree will guarantee me a job when I graduate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A faculty member, academic advisor, teaching assistant or other university affiliated person has encouraged and/or inspired me to study engineering	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A non-university affiliated mentor has encouraged and/or inspired me to study engineering	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

***9. Please indicate how strongly you disagree or agree with each of the statements:**

	Disagree Strongly	Disagree	Agree	Agree Strongly	<i>I prefer not to answer</i>
Creative thinking is one of my strengths	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am skilled at solving problems that can have multiple solutions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

***10. Rate yourself on each of the following traits as compared to your classmates. We want the most accurate estimate of how you see yourself.**

	Lowest 10%	Below Average	Average	Above Average	Highest 10%	<i>I prefer not to answer</i>
Self confidence (social)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Leadership ability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Public speaking ability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Math ability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Science ability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to apply math and science principles in solving real world problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Business ability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to perform in teams	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Critical thinking skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

***11. How important do you think each of the following skills and abilities is to becoming a successful engineer?**

	Not Important	Somewhat Important	Very Important	Crucial	<i>I prefer not to answer</i>
Self confidence (social)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Leadership ability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Public speaking ability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Math ability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Science ability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to apply math and science principles in solving real world problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Business ability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to perform in teams	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Critical thinking skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*12. Please rate your satisfaction with this institution on each aspect of campus life listed below. If you do not have experience with this aspect, mark N/A.

	Very Dissatisfied	Dissatisfied	Satisfied	Very Satisfied	N/A	<i>I prefer not to answer</i>
Quality of instruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Availability of instructors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quality of advising by instructors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Academic advising	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*13. Please rate the overall quality of your collegiate experience so far:

- Very dissatisfied
- Dissatisfied
- Satisfied
- Very satisfied
- I prefer not to answer*

*14. Think about the engineering, math or science classes you are taking/have taken during the current school year. Indicate how often you: (Mark N/A if you have not taken any engineering related classes.)

	Never	Rarely	Occasionally	Frequently	N/A	<i>I prefer not to answer</i>
Came late to engineering class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Skipped engineering class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Turned in engineering assignments that did not reflect your best work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Turned in engineering assignments late	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*15. Think about the liberal arts classes (not engineering, math, or science classes) you are taking/have taken during the current school year. Indicate how often you: (Mark N/A if you have not taken any liberal arts classes.)

	Never	Rarely	Occasionally	Frequently	N/A	<i>I prefer not to answer</i>
Came late to liberal arts class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Skipped liberal arts class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Turned in liberal arts assignments that did not reflect your best work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Turned in liberal arts assignments late	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*16. How well are you meeting the workload demands of your coursework?

- I am meeting all of the demands easily
- I am meeting all of the demands, but it is hard work
- I am meeting most of the demands, but cannot meet some
- I can meet some of the demands, but cannot meet most
- I cannot meet any of the demands
- I prefer not to answer*

*17. How stressed do you feel in your coursework right now?

- No stress
- Moderately low stress
- Moderate stress
- Moderately high stress
- High stress
- I prefer not to answer*

*18. During the current school year, how much pressure have you felt with each of the following?

	No Pressure	Moderately Low Pressure	Moderate Pressure	Moderately High Pressure	High Pressure	<i>I prefer not to answer</i>
Course load (amount of course material being covered)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Course pace (the rate at which the course material is being covered)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Balance between social and academic life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*19. During the current school year, how often have you interacted with your instructors (faculty, teaching assistants) in your *engineering, math, or science* classes (e.g. by phone, e-mail, IM, or in person)? Mark N/A if you have not taken any engineering, math, or science classes this year.

	Never	Rarely	Occasionally	Often	Very Often	N/A	<i>I prefer not to answer</i>
Instructors during class	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Instructors during office hours	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Instructors outside of class or office hours	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*20. Some people are involved in non-engineering activities on or off campus, such as hobbies, civic or church organizations, campus publications, student government, social fraternity or sorority, sports, etc. How important is it for you to be involved in these kind of activities?

- Not Important
- Somewhat Important
- Very Important
- Essential
- I prefer not to answer*

***21. How often are you involved in the kinds of non-engineering activities described above?**

- Never
- Rarely
- Occasionally
- Frequently
- I prefer not to answer*

***22. What is your level of involvement in student engineering activities such as engineering societies?**

- No involvement
- Limited involvement
- Moderate involvement
- Extensive involvement
- I prefer not to answer*

***23. Since coming to college, have you had any research experience(s)?**

- No
- Yes, in engineering related areas
- Yes, in non-engineering related areas
- Yes, in both engineering and non-engineering related areas
- I prefer not to answer*

***24. Before college, how much knowledge did you have about the engineering profession?**

- No knowledge
- Limited knowledge
- Moderate knowledge
- Extensive knowledge
- I prefer not to answer*

***25. Since entering college, how much knowledge have you gained about the engineering profession?**

- No knowledge
- Limited knowledge
- Moderate knowledge
- Extensive knowledge
- I prefer not to answer*

***26. How did you gain your knowledge about the engineering profession? (Mark all that apply)**

- From being a visitor
- From being a co-op student
- From being an intern
- From being an employee
- From a family member
- From a close friend
- Other:
- I prefer not to answer*

***27. Do any of your immediate family members (parents, siblings) hold an engineering degree?**

- No
- Yes
- I prefer not to answer*

***28. Do you have any concerns about your ability to finance your college education?**

- None (I am confident that I will have sufficient funds)
- Some (but I probably will have sufficient funds)
- Major (I have funds but will graduate with significant debt)
- Extreme (not sure if I will have sufficient funds to complete college)
- I prefer not to answer*

*29. About how many hours do you spend in a typical 7-day week doing each of the following?

	0	1-5	6-10	11-15	16-20	21-25	26-30	More than 30	<i>I prefer not to answer</i>
Preparing for class (studying, reading, writing, doing homework or lab work, analyzing data, rehearsing, and other academic activities)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Working for pay	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Participating in co-curricular activities (organizations, campus publications, student government, social fraternity or sorority, intercollegiate or intramural sports, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Relaxing and socializing (watching TV, partying, exercising, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Providing care for dependents living with you (parents, children, spouse, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Commuting to class (driving, walking, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*30. What is your expected grade point average this academic term?

- A or A+ (3.9 or above)
- (3.5-3.8)
- B+ (3.2-3.4)
- B (2.9-3.1)
- (2.5-2.8)
- C+ (2.2-2.4)
- C (1.9-2.1)
- or lower (less than 1.5)
- I prefer not to answer*

***31. What is your expected grade point average overall?**

- A or A+ (3.9 or above)
- (3.5-3.8)
- B+ (3.2-3.4)
- B (2.9-3.1)
- (2.5-2.8)
- C+ (2.2-2.4)
- C (1.9-2.1)
- or lower (less than 1.5)
- I prefer not to answer*

***32. What do you see yourself doing in the first 3 years after graduation? (Mark all that apply)**

- Find a job working in the engineering profession
- Find a job working in a non-engineering profession
- Go to graduate school in engineering (Masters/PhD)
- Go to professional school (business, law, medicine, etc.)
- Go to graduate school NOT in engineering (Masters/PhD)
- Other: (please explain)
- I prefer not to answer*

***33. How sure are you about your plans after graduation?**

- Not at all sure
- Somewhat sure
- Pretty sure
- Absolutely sure
- I prefer not to answer*

*34. **Do you see yourself pursuing a career in engineering?**

- Definitely Not
- Probably Not
- Not Sure
- Probably Yes
- Definitely Yes
- I prefer not to answer*

*35. **Your sex:**

- Male
- Female
- I prefer not to answer*

*36. **What is your racial or ethnic identification? (Select only one)**

- American Indian or other native person
- Asian, Asian American, or Pacific Islander
- Black or African American
- White (non-Hispanic)
- Hispanic or Latino/a
- Multiracial
- Other:
- I prefer not to answer*

*37. **Are you:**

- A U.S. Citizen
- A Permanent Resident of the U.S.
- Other
- I prefer not to answer*

*38. **Were you born in the United States?**

- Yes
- If no, at what age did you immigrate to the U.S?
- I prefer not to answer*

*39. **Did one or more of your parents/guardians immigrate to the United States?**

- Yes
- No
- I prefer not to answer*

*40. **Is English your first language?**

- Yes
- No
- I prefer not to answer*

*41. **Are you a first-generation college student (first in your immediate family to attend college)?**

- Yes
- No
- I prefer not to answer*

*42. **Are you enrolled primarily as a:**

- Full-time student
- Part-time student
- I prefer not to answer*

*43. **Would you describe your family as: (Mark one)**

- Low income
- Middle income
- Upper-middle income
- High income
- I prefer not to answer*

***44. What is the highest level of education that your mother completed? (Mark one)**

- Did not finish high school
- Graduated from high school
- Attended college but did not complete degree
- Completed an Associate degree (AA, AS, etc.)
- Completed a Bachelor degree (BA, BS, etc.)
- Completed a Masters degree (MA, MS, etc.)
- Completed a Doctoral or Professional degree (JD, MD, PhD, etc.)
- Don't know or Not applicable
- I prefer not to answer*

***45. What is the highest level of education that your father completed? (Mark one)**

- Did not finish high school
- Graduated from high school
- Attended college but did not complete degree
- Completed an Associate degree (AA, AS, etc.)
- Completed a Bachelor degree (BA, BS, etc.)
- Completed a Masters degree (MA, MS, etc.)
- Completed a Doctoral or Professional degree (JD, MD, PhD, etc.)
- Don't know or Not applicable
- I prefer not to answer*

***46. You have been asked to design a playground. You have a limited amount of time and resources to gather information for your design. From the following list, please put a check mark next to the FIVE kinds of information you would MOST LIKELY NEED as you work on your design:**

- Availability of materials
- Body proportions
- Budget
- Handicapped accessibility
- Information about the area
- Labor availability and cost
- Legal liability
- Maintenance concerns
- Material costs
- Material specifications
- Neighborhood demographics
- Neighborhood opinions
- Safety
- Supervision concerns
- Technical references
- Utilities
- I prefer not to answer*

*47. Which of the following statements best describes your situation with respect to an engineering major? (Mark one)

I started at this institution...

- Intending to major in engineering and never doubted the decision.
- Intending to major in engineering and have/had doubts.
- Considering engineering, but was open to other majors, too.
- Intending another major, but am now considering engineering.
- Completely undecided about what my major would be.
- I prefer not to answer

*48. My decision to CONTINUE with an engineering major *primarily* came from: (Mark one)

- Not applicable - I am not continuing in an engineering major.
- Experiences with **PRE-ENGINEERING**-related (math, physics, etc) coursework, faculty, and/or research/internship(s)
- Experiences with **ENGINEERING**-related coursework, faculty, and/or research/internship(s)
- Experiences with **OTHER** coursework, faculty, and/or research/internship(s)
- I prefer not to answer

*49. My DOUBTS about continuing in an engineering major *primarily* came from: (Mark one)

- Not applicable - I never doubted continuing in an engineering major.
- Experiences with **PRE-ENGINEERING**-related (math, physics, etc) coursework, faculty, and/or research/internship(s)
- Experiences with **ENGINEERING**-related coursework, faculty, and/or research/internship(s)
- Experiences with **OTHER** coursework, faculty, and/or research/internship(s)
- I prefer not to answer

50. **Is there anything you want to tell us about your experiences in engineering that we haven't already asked you about?**

*51. **How did you learn about this survey? (Mark all that apply)**

- Advertisement in student newspaper
- Announcement in class
- Given time in class to complete the survey
- Announcement or email from engineering society or other student group
- Email from a friend
- Email from school official/dean
- Poster/flyer
- Other
- I prefer not to answer*

*52. **Would you have been willing to take this survey if the compensation was: (Mark all that apply)**

- Drawing for \$50 (1 chance out of 100)
- \$0 - No compensation
- I prefer not to answer*