Variable and Item Content	SURV-1: C1Y1A Winter 04	SURV 2: C1Y1B Spring 04	SURV 3: C1Y2A Fall 04
1a: Academic Persistence	23. Do see yourself studying or practicing e	25. Do see yourself studying or p	2. Do you intend to complete a maj
	2. What do you intend to major in?	2. What do you intend to major ir	3. What do you intend to major in?
	3. What do you intend to major in (currently	3. What do you intend to major ir	4. If you intend to double major, wh
	4. What is the highest academic degree tha	4. What is the highest academic degree that you intend to obtain in e	
1b: Professional Persistence	Not asked	Not asked	5. Do you intend to practice, condu
2a: Motivation (Financial)	7c. Engineers make more money than most	8c. Engineers make more money	7c. Engineers make more money th
	7g. Engineers are well paid	8g. Engineers are well paid	7f. Engineers are well paid
	7j. An engineering degree will guarantee me	8j. An engineering degree will gu	7i. An engineering degree will guar
	7h. Engineering is an occupation that is resp	8h. Engineering is an occupation	7g. Engineering is an occupation th
2b: Motivation (Family Influence)			7d. My parents would disapprove if

	7i. My parents want me to be an engineer	8i. My parents want me to be an	7h. My parents want me to be an e
	7d. My parent(s) are making me study engir	8d. My parent(s) are making me study engineering	
2c: Motivation (Social Good)	7b. Technology plays an important role in s	8b. Technology plays an importa	7b. Technology plays an important
	7f. Engineers have contributed greatly to fix	8f. Engineers have contributed g	7e. Engineers have contributed gre
2d: Motivation (High School Mentor Influence)	Not asked	8l. High school teachers/advisors	Not asked
	Not asked	9k. I had one or more high school math/science teachers who seeme	
	Not asked	9n. One or more of my favorite high school teachers were math/scier	
2e: Motivation (Mentor Influence)	Not asked	Not asked	7k. A faculty member, academic ac
	Not asked	Not asked	7l. A non-university affiliated mentc
3a: Confidence in Math & Science Skills	19f. Math ability	21f. Math ability	10e. Math ability
	19g. Science ability	21g. Science ability	10f. Science ability
			10j. Ability to apply math & science
3b: Confidence in Professional and Interpersonal Skills	19b. Self confidence (social)	21b. Self confidence (social)	10a. Self confidence (social)
	19d. Leadership ability	21d. Leadership ability	10c. Leadership ability
	19e. Public speaking ability	21e. Public speaking ability	10d. Public speaking ability
	19i. (Written) Communication skills	21i. (Written) Communication ski	10h. Communication skills
	19j. Business ability	21j. Business ability	10k. Business ability
			10l. Ability to perform in teams
3c: Confidence in Solving Open-ended Problems	19c. Self understanding	21c. Self understanding	10b. Self understanding
			9a. Creative thinking is one of my s
	8g. I enjoy problems that can be solved in d	9h. I enjoy problems that can be	9d. I am skilled at solving problems

	10b. Confidence: Critical thinking skills	11b. Confidence: Critical thinking	10i. Critical thinking skills
			7j. Engineers are creative problem
			14b. Since the beginning of fall terr
4a: Perceived Importance in Math & Science Skills			
	20b. Math ability	22b. Math ability	11a. Math ability
	20c. Science ability	22c. Science ability	11b. Science ability
			11f. Ability to apply math & science
4b: Perceived Importance in Professional & Interpersonal Skills			
	20a. Public speaking ability	22a. Public speaking ability	
	20e. (Written) Communication skills	22e. (Written) Communication sk	11d. Communication skills
	20f. Business ability	22f. Business ability	11g. Business ability
			11h. Ability to perform in teams
5: Knowledge of the Engineering Profession		9q. I am familiar with what a prac	9c. I am familiar with what a practic
	33. Did any of your immediate family memb	26. How many of your friends and family members are practicing en	
	27. What portion of your friends in college ((	27. What portion of your friends in college (on this campus or other c	

6a: Exposure to Project-Based Learning Methods: Individual	22b. Teaching methods - Individual projects	24b. Teaching methods - Individ	19b. Teaching methods - Individua
6b: Exposure to Project-Based Learning Methods: Team	22c. Teaching methods - Team projects	24c. Teaching methods - Team p	19c. Teaching methods - Team prc
7: Collaborative Work Style	8a. I prefer working/studying alone (reverse	9a. I prefer working/studying alor	8a. I prefer studying in a group to s
			8c. I prefer working as part of a tea
			8d. I get along well with others in st
8: Extracurricular Fulfillment (Non-engineering)			21. Importance of non-engineering
			22. Frequency of involvement in nc
8b: Extracurricular Involvement (Engineering)			
8c: Research Experience			
9: Curriculum Overload			23a. Pressure - course load
			23b. Pressure - course pace
			23c. Pressure - Balance between s
			24. How well are you meeting work
			25. How stressed do you feel in yo
10: Financial Difficulties	38. Do you have any concerns about your ability to finance your college educ		26. Do you have any concerns abo
	13e. Frequency: Worried about how you would pay for school		
11a: Academic Disengagement - Liberal Arts courses	17a. Came late to liberal arts class	18a. Came late to liberal arts cla	16a. Came late to non-engineering
	17b. Skipped liberal arts class	18b. Skipped liberal arts class	16b. Skipped non-engineering clas
	17c. Turned in liberal arts assignments that	18c. Turned in liberal arts assign	16c. Turned in non-engineering ass
	17d. Turned in liberal arts assignments late	18d. Turned in liberal arts assign	16d. Turned in non-engineering ass
	17e. Thought liberal arts classes were borin	18e. Thought liberal arts classes	16e. Thought non-engineering clas
11b: Academic Disengagement - Engineering-Related courses	16a. Came late to engineering class	17a. Came late to engineering cl	15a. Came late to engineering clas
	16b. Skipped engineering class	17b. Skipped engineering class	15b. Skipped engineering class
	16c. Turned in engineering assignments tha	17c. Turned in engineering assig	15c. Turned in engineering assignr
	16d. Turned in engineering assignments lat	17d. Turned in engineering assig	15d. Turned in engineering assignr

11c: Academic Disengagement - Overall	16e. Thought engineering classes were bori Constructs 11a + 11b	17e. Thought engineering classe Constructs 11a + 11b	15e. Thought engineering classes Constructs 11a + 11b
12a: Frequency of Interaction with Faculty	18a. Faculty during office hours	20a. Faculty during office hours	17a. Faculty during office hours
	18b. Faculty outside of class or office hours	20b. Faculty outside of class or c	17b. Faculty outside of class or offi
12b: Frequency of Interaction with Teaching Assistants	18c. TAs during office hours	20c. TAs during office hours	17c. TAs during office hours
	18d. TAs outside of class or office hours	20d. TAs outside of class or offic	17d. TAs outside of class or office
12c: Frequency of Interaction with Instructors	Constructs 12a + 12b	Constructs 12a + 12b	Constructs 12a + 12b
13a: Satisfaction with Faculty	11b. Quality of instruction by faculty	12b. Quality of instruction by facu	12a. Quality of instruction by faculty
	11c. Availability of faculty	12c. Availability of faculty	12b. Availability of faculty
13b: Satisfaction with Teaching Assistants	11d. Quality of instruction by TAs	12d. Quality of instruction by TAs	12c. Quality of instruction by TAs
	11e. Availability of TAs	12e. Availability of TAs	12d. Availability of TAs
13c: Satisfaction with Instructors	Constructs 13a + 13b	Constructs 13a + 13b	Constructs 13a + 13b
13d. Satisfaction with advising			
14: Satisfaction with Academic Facilities	12a. Computer facilities	13a. Computer facilities	13a. Computer facilities
	12b. Libraries	13b. Libraries	13b. Libraries
	12c. Classrooms	13c. Classrooms	13c. Classrooms
	12f. Laboratories	13f. Laboratories	13f. Laboratories
15: Overall Satisfaction with Collegiate Experience		6. Overall quality of collegiate ex	35. Overall quality of collegiate exp
16: Intrinsic Motivation (Psychological)		29. I feel good when I am doing engineering activities 29. Majoring in engineering is fun 29. I think engineering is interesting	
16: Intrinsic Motivation (Behavioral)			

Demographic Variables

Expected Graduation Date	1. Expected year of graduation	1. Expected year of graduation	1. Expected year of graduation
Expected GPA academic term			
Expected GPA overall			
Sex	24. Sex		
Age	25. How old will you be on December 31st of this year?		
Ethnicity	26. Ethnic background		
Marital status	28. Marital status		
Dependents	29. Number of dependents		
Citzenship	27. Citizenship		
Current academic standing			
Traditional/nontraditional student			
Preliminary area of interest			
Full time/part-time student			
Year graduated from high school	30. What year did you graduate from high school?		
High school community	31. How would you describe the community where you attended high school?		
Average grade in high school	32. What was your average grade in high school?		
Residence in college	33. Where are you living now while attending college?		
Roommates in college	34. With whom do you live during the school year?		
Disabilities	41. Do you have any of the following physical, learning, or health disabilities?		
Assistive technologies	42. Do you receive any of the following assistive technology or other accommodations?		
Cultural Background			
Cultural Background			
Cultural Background			
Cultural Background			
SES	37a. How well do you meet your college expenses - self (income)	27a. How well do you meet your cc	
SES	37b. College expenses - self (savings)	27b. College expenses - self (savir	
SES	37c. College expenses - parents and family	27c. College expenses - parents ar	
SES	37d. College expense - employer support	27d. College expense - employer s	
SES	37e. College expenses - scholarships and grants	27e. College expenses - scholarsh	
SES	37f. College expenses - loans	27f. College expenses - loans	
SES	37g. College expenses - other sources		

SES	34. Highest level of education of mother		
SES	35. Highest level education of father		
SES	36. Best estimate of parents' total income		
SES			

Unofficial item groupings

Research			34b. Did you participate in enginee
Research			
Research			
Engineering Extra-curricular			34a. Did you participate in an engir
Engineering Extra-curricular			34c. Did you participate in enginee
Engineering Extra-curricular		52. What are your summer plans	32. What did you do this summer th
Engineering Extra-curricular			33. Did your experience advance y
Engineering Extra-curricular			
Engineering Extra-curricular			
Engineering Extra-curricular			
Engineering Extra-curricular	50. Some students participate in design competitions, internships, and clubs. In the space provided identify engir		
NSSE	6a. Hours spent - preparing for class	7a. Hours spent - preparing for cl	31a. Hours spent - preparing for cla
NSSE	6b. Hours spent - working for pay	7b. Hours spent - working for pay	31b. Hours spent - working for pay
NSSE	6c. Hours spent - participating in co-curricul	7c. Hours spent - participating in	31c. Hours spent - participating in c
NSSE	6d. Hours spent - relaxing and socializing	7d. Hours spent - relaxing and so	31d. Hours spent - relaxing and soc
NSSE	6e. Hours spent - providing care	7e. Hours spent - providing care	31e. Hours spent - providing care
NSSE	6f. Hours spent - commuting to class	7f. Hours spent - commuting to c	31f. Hours spent - commuting to cla
Confirm/Doubt			
Confirm/Doubt			
Confirm/Doubt			
Confirm/Doubt	54. Identify any classes (in high school or co	43. Identify any classes this year that have STRONGLY REINFORC	
Confirm/Doubt	55. Identify any classes (in high school or co	44. Identify any classes this year that have STRONGLY WEAKENED	

Survey verification			
Survey process information			
Survey process information			
Open-ended question			
Items not assigned to a construct and Deleted items/constructs			
Grad school not in engineering	5. If you are thinking of going to graduate sc	5. If you are thinking of going to (	6. If you are thinking of going to gra
Course taught by grad students	21. What portion of the courses you have ta	23. What portion of the courses y	18. What portion of the courses you
Teaching methods - lectures	22a. During the current school year, what p(	24a. During the current school ye	19a. During the current school yea
Teaching methods - labs	22d. Teaching methods - Labs	24d. Teaching methods - Labs	19d. Teaching methods - Labs
Teaching methods - seminars	22e. Teaching methods - Seminars	24e. Teaching methods - Semina	19e. Teaching methods - Seminars
Competitive work style (personal)			8b. I am a competitive person
Competitive work style (personal)			8e. I strive to get higher grades tha
Competitive work style (institutional)			8g. The educational institution I am
Competitive work style (institutional)	8h. My instructors often remind students tha	9i. My instructors often remind st	8h. My instructors often remind stu
Competitive work style (institutional)			8f. I prefer keeping good ideas to m
Competitive work style (institutional)	8k. My instructors grade on a curve	9m. My instructors grade on a cu	8k. My instructors grade on a curve
Collaborative work style (institutional)	8i. I have easy access to work spaces wher(	9j. I have easy access to work sp	8i. I have easy access to work spa(
Collaborative work style (institutional)	8j. I am encouraged by my instructors to init	9l. I am encouraged by my instru	8j. I am encouraged by my instructo
Collaborative work style (institutional)			8l. The educational institution I am
Collaborative work style (institutional)			14a. Since the beginning of fall terr
Satisfaction with academic services	12d. Satisfaction with tutoring	13d. Satisfaction with tutoring	13d. Satisfaction with tutoring
Satisfaction with academic services	12e. Satisfaction with academic advising	13e. Satisfaction with academic a	13e. Satisfaction with academic ad
Exposure to PBL Methods			14c. Since the beginning of fall terr
Exposure to PBL Methods			20. To what extent have your cours
Exposure to PBL Methods	8e. I have strong problem solving skills	9e. I have strong problem solving	9b. I have strong problem solving s
Who Am I questions		45.-51. Who am I questions	
Confidence in computer skills	19h. Confidence: Computer and programmi	21h. Confidence: Computer and	10g. Confidence: Computer skills
Perceived importance of computer skills	20d. Perceived importance: Computer and p	22d. Perceived importance: Com	11c. Perceived importance: Compu
Perceived importance of critical thinking skills			11e. Perceived importance: Critical

UPri questions - Motivation, Self-Esteem, Ethnic identity	29.-32. UPri questions	
Motivation (Belief That Engineers Improve Welfare of Society Through Creative Work)	7a. I enjoy figuring out how things work	8a. I enjoy figuring out how thing: 7a. I enjoy figuring out how things v
Motivation (Belief That Engineers Improve Welfare of Society Through Creative Work)	7e. Engineers are innovative	8e. Engineers are innovative
Motivation (Belief That Engineers Improve Welfare of Society Through Creative Work)	7k. Engineers are creative	8k. Engineers are creative
	8b. I enjoy the subjects of science and math	9b. I enjoy the subjects of science and math the most
	8c. Creative thinking is one of my strengths	9c. Creative thinking is one of my strengths
	8d. Studying in a group is better than studyi	9d. Studying in a group is better than studying by myself
	8f. I enjoy taking liberal arts courses more th	9f. I enjoy taking liberal arts courses more than science and math co
		9g. My friends are supportive of me when I am academically succes:
		9o. I can count on my friends at school for emotional support when I
		9p. I can count on my friends at school for emotional support when I
	9a. Importance: Getting higher grades than	10a. Importance: Getting higher grades than my classmates
	9b. Importance: Influencing social values	10b. Importance: Influencing social values
	9c. Importance: Becoming an authority in m	10c. Importance: Becoming an authority in my field
	9d. Importance: Keeping goood ideas to my	10d. Importance: Keeping goood ideas to myself unless it is to my ac
	9e. Importance: Helping to promote racial u	10e. Importance: Helping to promote racial understanding
	9f. Importance: Becoming a community leac	10f. Importance: Becoming a community leader
	9g. Importance: Helping others who are in d	10g. Importance: Helping others who are in difficulty
	9h. Importance: When playing any game, pl	10h. Importance: When playing any game, playing to win
	9i. Importance: Developing a meaningful ph	10i. Importance: Developing a meaningful philosophy of life
	9j. Importance: Becoming a practicing engin	10j. Importance: Becoming a practicing engineer
	9k. Importance: Getting along with others	10k. Importance: Getting along with others
	9l. Importance: Working as part of a team	10l. Importance: Working as part of a team
	9m. Importance: Becoming a student gover	10m. Importance: Becoming a student government official
	9n. Importance: Establishing relationships w	10n. Importance: Establishing relationships with engineering student
	9o. Importance: Establishing relationships w	10o. Importance: Establishing relationships with non-engineering stu
	10a. Confidence: Analytical and problem so	11a. Confidence: Analytical and problem solving skills
	10c. Confidence: General knowledge	11c. Confidence: General knowledge
	10d. Confidence: Knowledge of a particular	11d. Confidence: Knowledge of a particular field or discipline
	10e. Confidence: Interest in studying engine	11e. Confidence: Interest in studying engineering
	11a. Satisfaction: Opportunities for commun	12a. Satisfaction: Opportunities for community service
	13a. Frequency: Felt that your courses inspi	14a. Frequency: Felt that your courses inspired you to think in new w
	13b. Frequency: Felt you did not have enou	14b. Frequency: Felt you did not have enough time to pursue nonaca
	13c. Frequency: Worried about keeping up v	14c. Frequency: Worried about keeping up with your schoolwork
	13d. Frequency: Felt you did not have a "so	14d. Frequency: Felt you did not have a "social life"
	13f. Frequency: Felt stressed	14e. Frequency: Felt stressed

13g. Frequency: Participated in a peer study	14f. Frequency: Participated in a peer study group
	14g. Frequency: Visited or worked in a commercial engineering envi
	14h. Frequency: Socialized with someone of another racial/ethnic gr
	14i. Frequency: Discussed racial issues
	14j. Frequency: Attended a racial/cultural awareness workshop/even
14a. Came late to math class	15a. Came late to math class
14b. Skipped math class	15b. Skipped math class
14c. Turned in math assignments that did n	15c. Turned in math assignments that did not reflect your best work
14d. Turned in math assignments late	15d. Turned in math assignments late
14e. Thought math classes were boring	15e. Thought math classes were boring
15a. Came late to science class	16a. Came late to science class
15b. Skipped science class	16b. Skipped science class
15c. Turned in science assignments that did	16c. Turned in science assignments that did not reflect your best wo
15d. Turned in science assignments late	16d. Turned in science assignments late
15e. Thought science classes were boring	16e. Thought science classes were boring
	19a. Frequency: Asked for advice about managing your coursework
	19b. Frequency: Worked with people who have diverse backgrounds
	19c. Frequency: Spent time in a non-academic role
	19d. Frequency: Requested feedback on course assignments from a
	19e. Frequency: "Crammed" all night studying for an exam or comple
	19f. Frequency: Worked collaboratively on an assignment that was p
	19g. Frequency: Decided to turn in "C" quality work over spending co
	19h. Frequency: Had a research experience on a faculty or graduate
	19i. Frequency: Prioritized a good grade in a general education cour
	19j. Frequency: Prioritized a good grade in a math, science, or engin
	19k. Frequency: Studied regularly in blocks of 2 hours or more
	19l. Frequency: Took a seminar course to discuss and argue ideas w
	19m. Frequency: Reduced time spent on course work to have more
	19n. Frequency: Asked for advice about managing your college expe
	19o. Frequency: Created a project outside of your academic work wi
	19p. Frequency: Monitored how you spent your time on your course
	19q. Frequency: Asked for help to strengthen a particular skill (e.g., v
	10r. Frequency: Reduced your course load to improve your grades
19a. Confidence: Self-confidence (intellectu	21a. Confidence: Self-confidence (intellectual)
52a. Frequency: Worked on class projects	28a. Frequency: Worked on class projects
52b. Frequency: Held a study group	28b. Frequency: Held a study group
52c. Frequency: Took a specific lecture-type	28c. Frequency: Took a specific lecture-type class
52d. Frequency: Took a specific laboratory c	28d. Frequency: Took a specific laboratory class
52e. Frequency: Worked on homework	28e. Frequency: Worked on homework
52f. Frequency: Reviewed class material	28f. Frequency: Reviewed class material

52g. Frequency: Prepared for class exams	28g. Frequency: Prepared for class exams
52h. Frequency: Wrote class reports	28h. Frequency: Wrote class reports
53. In what ways do you interact with other (	39. In what ways do you interact with other engineering students out
	40. When and under what circumstances (if any) do you rely on you
	41. Do you feel uncomfortable seeking emotional support from your f
	42. What is the race/ethnicity of your six closest friends at school? (c

43-46. Phil Bell's technology questions

48. What is the first word or phrase you think of to describe your favorite professor?

49. Do you believe your peers would agree with this description?

56. What intellectual, personal, financial, and other challenges do you feel you may need to overcome ito gradua

SURV 4: C1Y2B Spring 05	SURV 5: C1Y3A Fall 05	SURV 6: C1Y3B Spring 06
2. Do you intend to complete a m	2. Do you intend to complete a major i	2. Do you intend to complete a major in engineering?
3. What do you intend to major in	3. What do you intend to major in?	3. What do you intend to major in?
4. If you intend to double major, v engineering?	4. If you intend to double major, what i	4. If you intend to double major, what is the second maj
5. Do you intend to practice, con	5. Do you intend to practice, conduct r	5. Do you intend to practice, conduct research in, or tea
7b. Engineers make more money	7b. Engineers make more money than	7b. Engineers make more money than most other profe
7e. Engineers are well paid	7e. Engineers are well paid	7e. Engineers are well paid
7h. An engineering degree will gu	7h. An engineering degree will guaran	7h. An engineering degree will guarantee me a job whe
7f. Engineering is an occupation	7f. Engineering is an occupation that is	7f. Engineering is an occupation that is respected by oth
7c. My parents would disapprove	7c. My parents would disapprove if I ch	7c. My parents would disapprove if I chose a major othe

7g. My parents want me to be an	7g. My parents want me to be an engi	7g. My parents want me to be an engineer
7a. Technology plays an importa	7a. Technology plays an important rol	7a. Technology plays an important role in solving societ
7d. Engineers have contributed g	7d. Engineers have contributed greatly	7d. Engineers have contributed greatly to fixing problem
Not asked	Not asked	Not asked
ed genuinely excited about math/science		
nce teachers		
7j. A faculty member, academic a	7j. A faculty member, academic advsic	7j. A faculty member, academic advsior, teaching assist
7k. A non-university affiliated me	7k. A non-university affiliated mentor h	7k. A non-university affiliated mentor has encouraged a
10d. Math ability	9d. Math ability	10d. Math ability
10e. Science ability	9e. Science ability	10e. Science ability
10h. Ability to apply math & scier	9h. Ability to apply math & science prir	10g. Ability to apply math & science principles in solving
10a. Self confidence (social)	9a. Self confidence (social)	10a. Self confidence (social)
10b. Leadership ability	9b. Leadership ability	10b. Leadership ability
10c. Public speaking ability	9c. Public speaking ability	10c. Public speaking ability
10g. Communication skills	9g. Communication skills	10f. Communication skills
10i. Business ability	9i. Business ability	10h. Business ability
10j. Ability to perform in teams	9j. Ability to perform in teams	10i. Ability to perform in teams
9a. Creative thinking is one of my	8e. Creative thinking is one of my stre	9a. Creative thinking is one of my strengths
9c. I am skilled at solving probler	8g. I am skilled at solving problems tha	9c. I am skilled at solving problems that can have multip

10k. Critical thinking skills	10k. Critical thinking skills	10j. Critical thinking skills
7i. Engineers are creative proble	7i. Engineers are creative problem sol	7i. Engineers are creative problem solvers.
n, how often you felt challenged to solve open-ended problems that might have multiple solutions		
11d. Math ability	10d. Math ability	11d. Math ability
11e. Science ability	10e. Science ability	11e. Science ability
11g. Ability to apply math & scier	10h. Ability to apply math & science pr	11g. Ability to apply math & science principles in solving
11a. Self confidence (social)	10a. Self confidence (social)	11a. Self confidence (social)
11b. Leadership ability	10b. Leadership ability	11b. Leadership ability
11c. Public speaking ability	10c. Public speaking ability	11c. Public speaking ability
11g. Communication skills	10g. Communication skills	11f. Communication skills
11i. Business ability	10i. Business ability	11h. Business ability
11j. Ability to perform in teams	10j. Ability to perform in teams	11i. Ability to perform in teams
9b. I am familiar with what a prac	8f. I am familiar with what a practicing	9b. I am familiar with what a practicing engineer does
30. How much exposure have yo	29. How much exposure have you had	30. How much exposure have you had to a professiona
28. Do you have any family mem	27. Do you have any family members v	28. Do you have any family members who are practicing
29. Do you have any close friend	28. Do you have any close friends who	29. Do you have any close friends who are practicing er

19b. Teaching methods - Individu	18b. Teaching methods - Individual pr	19b. Teaching methods - Individual projects
19c. Teaching methods - Team p	18c. Teaching methods - Team projec	19c. Teaching methods - Team projects
8a. I prefer studying in a group tc	8a. I prefer studying in a group to stud	8a. I prefer studying in a group to studying by myself
8c. I prefer working as part of a te	8b. I prefer working as part of a team t	8c. I prefer working as part of a team to working alone
8d. I get along well with others in	8c. I get along well with others in study	8d. I get along well with others in study situations
8j. I am a collaborative person	8d. I am a collaborative person	8j. I am a collaborative person
21. Importance of non-engineerir	20. Importance of non-engineering act	21. Importance of non-engineering activities
22. Frequency of involvement in	21. Frequency of involvement in non-e	22. Frequency of involvement in non-engineering activit
		36. Research experiences since coming to college
23a. Pressure - course load	22a. Pressure - course load	23a. Pressure - course load
23b. Pressure - course pace	22b. Pressure - course pace	23b. Pressure - course pace
23c. Pressure - Balance betweer	22c. Pressure - Balance between soci	23c. Pressure - Balance between social and academic l
24. How well are you meeting wc	23. How well are you meeting workloa	24. How well are you meeting workload demands of you
25. How stressed do you feel in y	24. How stressed do you feel in your c	25. How stressed do you feel in your coursework right n
26. Do you have any concerns al	25. Do you have any concerns about y	26. Do you have any concerns about your ability to finar
16a. Came late to liberal arts cla	15a. Came late to liberal arts class	16a. Came late to liberal arts class
16b. Skipped liberal arts class	15b. Skipped liberal arts class	16b. Skipped liberal arts class
16c. Turned in liberal arts assign	15c. Turned in liberal arts assignments	16c. Turned in liberal arts assignments that did not refle
16d. Turned in liberal arts assign	15d. Turned in liberal arts assignments	16d. Turned in liberal arts assignments late
16e. Thought liberal arts classes	15e. Thought liberal arts classes were	16e. Thought liberal arts classes were boring
15a. Came late to engineering cl	14a. Came late to engineering class	15a. Came late to engineering class
15b. Skipped engineering class	14b. Skipped engineering class	15b. Skipped engineering class
15c. Turned in engineering assig	14c. Turned in engineering assignmen	15c. Turned in engineering assignments that did not ref
15d. Turned in engineering assig	14d. Turned in engineering assignmen	15d. Turned in engineering assignments late

15e. Thought engineering classe	14e. Thought engineering classes wer	15e. Thought engineering classes were boring
Constructs 11a + 11b	Constructs 11a + 11b	Constructs 11a + 11b
17a. Faculty during class	16a. Faculty during class	17a. Faculty during class
17b. Faculty during office hours	16b. Faculty during office hours	17b. Faculty during office hours
17c. Faculty outside of class or o	16c. Faculty outside of class or office h	17c. Faculty outside of class or office hours
17d. TAs during class	16d. TAs during class	17d. TAs during class
17e. TAs during office hours	16e. TAs during office hours	17e. TAs during office hours
17f. TAs outside of class or office	16f. TAs outside of class or office hour	17f. TAs outside of class or office hours
Constructs 12a + 12b	Constructs 12a + 12b	Constructs 12a + 12b
12a. Quality of instruction by facu	11a. Quality of instruction by faculty	12a. Quality of instruction by faculty
12b.Quality of advising by faculty	11b.Quality of advising by faculty	12b.Quality of advising by faculty
12c. Availability of faculty	11c. Availability of faculty	12c. Availability of faculty
12d. Quality of instruction by TAs	11d. Quality of instruction by TAs	12d. Quality of instruction by TAs
12e. Quality of advising by TAs	11e. Quality of advising by TAs	12e. Quality of advising by TAs
12f. Availability of TAs	11f. Availability of TAs	12f. Availability of TAs
Constructs 13a + 13b	Constructs 13a + 13b	Constructs 13a + 13b
13a. Computer facilities	12a. Computer facilities	13a. Computer facilities
13b. Libraries	12b. Libraries	13b. Libraries
13c. Classrooms	12c. Classrooms	13c. Classrooms
13f. Laboratories	12f. Laboratories	13f. Laboratories
32. Overall quality of collegiate e	31. Overall quality of collegiate experie	32. Overall quality of collegiate experience
38. I feel good when I am doing engineering activities		
38. Majoring in engineering is fun		
29. I think engineering is interesting		

1. Expected year of graduation

33. Sex

34. Ethnic background

35. Citizenship

36. Average grade in H.S.

27a. How well do you meet your
27b. College expenses - self (sa
27c. College expenses - parents
27d. College expense - employe
27e. College expenses - scholar
27f. College expenses - loans

1. Expected year of graduation

26a. How well do you meet your colleg
26b. College expenses - self (savings)
26c. College expenses - parents and f
26d. College expense - employer supp
26e. College expenses - scholarships
26f. College expenses - loans

1. Expected year of graduation
51. What is your expected GPA this academic term

27a. How well do you meet your college expenses - sel
27b. College expenses - self (savings)
27c. College expenses - parents and family
27d. College expense - employer support
27e. College expenses - scholarships and grants
27f. College expenses - loans

37. Highest level of education of mother

32. Best estimate of parents' total income

ring-related research last summe 38b. Did you participate in engineering-related research last summer?

ıeering related internship/job last 38a. Did you participate in an engineering related internship/job last summer?

ring-related coursework last sumr 38c. Did you participate in engineering-related coursework last summer?

53. What are your summer plans 36. What did you do this summer that 52. What are your summer plans? (open)

our interest in studying engineerir 37. Did your experience advance your interest in studying engineering? (Y/N)

ıeering-related activities you have 33. Reasons for a leave of absence during fall term

31a. Hours spent - preparing for	30a. Hours spent - preparing for class	31a. Hours spent - preparing for class
31b. Hours spent - working for pa	30b. Hours spent - working for pay	31b. Hours spent - working for pay
31c. Hours spent - participating i	30c. Hours spent - participating in co-c	31c. Hours spent - participating in co-curricular activities
31d. Hours spent - relaxing and s	30d. Hours spent - relaxing and socializ	31d. Hours spent - relaxing and socializing
31e. Hours spent - providing care	30e. Hours spent - providing care	31e. Hours spent - providing care
31f. Hours spent - commuting to	30f. Hours spent - commuting to class	31f. Hours spent - commuting to class
		33. Some students during their academic career have a
		34. Doubting experiences
		35. Confirming experiences

ED your interest in studying engineering. (open)
D your interest in studying engineering. (open)

6. If you are thinking of going to g	6. If you are thinking of going to gradu	6. If you are thinking of going to graduate school in a fie
18. What portion of the courses y	17. What portion of the courses you ha	18. What portion of the courses you have taken during t
19a. During the current school ye	18a. During the current school year, w	19a. During the current school year, what portion of you
19d. Teaching methods - Labs	18d. Teaching methods - Labs	19d. Teaching methods - Labs
19e. Teaching methods - Semina	18e. Teaching methods - Seminars	19e. Teaching methods - Seminars
8b. I am a competitive person		8b. I am a competitive person
8e. I strive to get higher grades than my classmates		8e. I strive to get higher grades than my classmates
8f. The educational institution I am attending promotes competitive work		8f. The educational institution I am attending promotes c
8g. My instructors often remind students that they need to do better thar		8g. My instructors often remind students that they need
nyself		
8h. I have easy access to work spaces where I can participate in peer st		8h. I have easy access to work spaces where I can part
8i. I am encouraged by my instructors to initiate or participate in peer stu		8i. I am encouraged by my instructors to initiate or partic
8k. The educational institution I am attending promotes collaborative wo		8k. The educational institution I am attending promotes
n, how often you participated in a peer study group		
13d. Satisfaction with tutoring	12d. Satisfaction with tutoring	13d. Satisfaction with tutoring
13e. Satisfaction with academic a	12e. Satisfaction with academic advisi	13e. Satisfaction with academic advising
14. Since January, how often hav	13. Since January, how often have you	14. Since January, how often have you taken courses w
20. To what extent have your cou	19. To what extent have your courses	20. To what extent have your courses required your eng
kills		
44.-49. Who am I questions		45.-50. Who am I questions
10f. Confidence: Computer skills	9f. Confidence: Computer skills	
11f. Perceived importance: Comp	10f. Perceived importance: Computer skills	
thinking skills		

38.-41. UPri questions

work

urses
sful
experience academic difficulties
experience personal difficulties

dvantage to share them

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dents

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ademic activities

ronment
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rk

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ın instructor
eting an assignment due the next day
articularly challenging or complex
onsiderably more time to turn in "A" quality work
student project
se over a passing grade in a math, science, engineering course
ıeering course over a passing grade in a general education course

vith other students
time for recreation
erience
th the supervision of a professor
work
writing, math)

side the classroom? (open)
friends at school for emotional support? (open)
friends at school? If you do, under what circumstances? (open)
pen)

te with an engineering degree?

SURV 7: C1Y4A Spring 07	APPLES1
2. Do you intend to complete a major in engineering?	7. Do you intend to complete a major in engineering?
3. What do you intend to major in?	6. What is/are your current major(s) or intended major(s)? (Mark all that apply)
4. If you intend to double major, what is the second major you intend to complete?	
	48. Double check: responses for “Not applicable – I am not continuing in an engineering major”
5. Do you intend to practice, conduct research in, or teach engineering for at least 3 years after graduation?	
49. Post-graduation plans (open)	34. Do you see yourself pursuing a career in engineering? 33. How sure are you about your plans after graduation?
	32a. What do you see yourself doing in the first 3 years after graduation: Job working in engineering profession
	32b. What do you see yourself doing in the first 3 years after graduation: Job working in non-engineering profession
	32c. What do you see yourself doing in the first 3 years after graduation: Go to graduate school in engineering (Masters/PhD)
	32d. What do you see yourself doing in the first 3 years after graduation: Go to professional school (business, law, medicine, etc.)
	32e. What do you see yourself doing in the first 3 years after graduation: Go to graduate school NOT in engineering (Masters/PhD)
	32f. What do you see yourself doing in the first 3 years after graduation: Other
7b. Engineers make more money than most other professionals	8b. Engineers make more money than most other professionals
7e. Engineers are well paid	8e. Engineers are well paid
7g. An engineering degree will guarantee me a job when I graduate	8g. An engineering degree will guarantee me a job when I graduate
ıer people	
7c. My parents would disapprove if I chose a major other than engineering	8c. My parents would disapprove if I chose a major other than engineering

7f. My parents want me to be an engineer	8f. My parents want me to be an engineer
7a. Technology plays an important role in solving society's problems	8a. Technology plays an important role in solving society's problems
7d. Engineers have contributed greatly to fixing problems in the world	8d. Engineers have contributed greatly to fixing problems in the world
Not asked	Not asked
7h. A faculty member, academic advsior, teaching assistant or other university affiliated person has encouraged and/or inspired me to study engineering	8h. A faculty member, academic advsior, teaching assistant or other university affiliated person has encouraged and/or inspired me to study engineering
7i. A non-university affiliated mentor has encouraged and/or inspired me to study engineering.	8i. A non-university affiliated mentor has encouraged and/or inspired me to study engineering.
9d. Math ability	10d. Math ability
9e. Science ability	10e. Science ability
9g. Ability to apply math & science principles in solving real world problems	10g. Ability to apply math & science principles in solving real world problems
9a. Self confidence (social)	10a. Self confidence (social)
9b. Leadership ability	10b. Leadership ability
9c. Public speaking ability	10c. Public speaking ability
9f. Communication skills	10f. Communication skills
9h. Business ability	10h. Business ability
9i. Ability to perform in teams	10i. Ability to perform in teams
8a. Creative thinking is one of my strengths	9a. Creative thinking is one of my strengths (4 pt scale)
8c. I am skilled at solving problems that can have multiple solutions	9b. I am skilled at solving problems that can have multiple solutions (4 pt scale)

9j. Critical thinking skills	10j. Critical thinking skills (5 pt scale)
10d. Math ability	11d. Math ability
10e. Science ability	11e. Science ability
10g. Ability to apply math & science principles in solving real world problems	11g. Ability to apply math & science principles in solving real world problems
10a. Self confidence (social)	11a. Self confidence (social)
10b. Leadership ability	11b. Leadership ability
10c. Public speaking ability	11c. Public speaking ability
10f. Communication skills	11f. Communication skills
10h. Business ability	11h. Business ability
10i. Ability to perform in teams	11i. Ability to perform in teams
8b. I am familiar with what a practicing engineer does	
25. How much exposure have you had to a professional engineering environment as a visitor, intern, or employee	
g engineers?	How did you gain your knowledge about the engineering profession?
ıgineers?	26a. From being a visitor
	26b. From being a co-op student
	26c. From being an intern
	26d. From being an employee
	26e. From a family member
	26f. From a close friend
	26g. From other
	27. Yes/No: Do any of your immediate family members (parents, siblings) hold an engineering degree?
	24. Before college, how much knowledge did you have about the engineering profession?
	25. Since entering college, how much knowledge have you gained about the engineering profession?

17b. Teaching methods - Individual projects	
17c. Teaching methods - Team projects	
Deleted	
Deleted	
Deleted	
Deleted	
18. Importance of non-engineering activities	20. Importance of non-engineering activities
19. Frequency of involvement in non-engineering activities	21. Frequency of involvement in non-engineering activities
	22. Level of involvement in student engineering activities such as engineering societies
31. Research experiences since coming to college	23. Since coming to college, have you had any research experiences?
20a. Pressure - course load	18a. Pressure - course load
20b. Pressure - course pace	18b. Pressure - course pace
20c. Pressure - Balance between social and academic life	18c. Pressure - Balance between social and academic life
21. How well are you meeting workload demands of your coursework?	16. How well are you meeting workload demands of your coursework?
22. How stressed do you feel in your coursework right now?	17. How stressed do you feel in your coursework right now?
23. Do you have any concerns about your ability to finance your college education?	28. Do you have any concerns about your ability to finance your college education?
14a. Came late to liberal arts class	15a. Came late to liberal arts class
14b. Skipped liberal arts class	15b. Skipped liberal arts class
14c. Turned in liberal arts assignments that did not reflect your best work	15c. Turned in liberal arts assignments that did not reflect your best work
14d. Turned in liberal arts assignments late	15d. Turned in liberal arts assignments late
13a. Came late to engineering class	14a. Came late to engineering class
13b. Skipped engineering class	14b. Skipped engineering class
13c. Turned in engineering assignments that did not reflect your best work	14c. Turned in engineering assignments that did not reflect your best work
13d. Turned in engineering assignments late	14d. Turned in engineering assignments late

Constructs 11a + 11b

15a. Faculty during class
15b. Faculty during office hours
15c. Faculty outside of class or office hours

15d. TAs during class
15e. TAs during office hours
15f. TAs outside of class or office hours

Constructs 12a + 12b

11a. Quality of instruction by faculty
11b.Quality of advising by faculty
11c. Availability of faculty
11d. Quality of instruction by TAs
11e. Quality of advising by TAs
11f. Availability of TAs

Constructs 13a + 13b

12a. Computer facilities
12b. Libraries
12c. Classrooms
12d. Laboratories

27. Overall quality of collegiate experience

Constructs 11a + 11b

19a. Instructors during class
19b. Instructors during office hours
19c. Instructors outside of class or office hours

12a. Quality of instruction by instructors
12b.Quality of advising by instructors
12c. Availability of instructors
12d: Satisfaction: Academic advising

13. Overall quality of collegiate experience

1. What is your expected year of graduation from college?	4. What year do you expect to complete your undergraduate degree?
32. What is your expected GPA this academic term	30. What is your expected GPA this academic term
	31. What is your expected GPA overall
33. Sex	35. Sex
34. Age on 12/31 this year	
35. Ethnic background	36. Racial or ethnic identification
36. Marital status	
37. Number of dependents	
38. Citizenship	37. Citizenship status
	2. What is your current academic standing? (freshman, sophomore, junior, senior, 5th year senior, graduate student, other)
	3. When you entered this institution, were you: (first-time, returning, transfer student)
	5. What were you most interested in majoring in when you first came to university?
	42. Full-time/part-time student
39. Born in U.S.	38. Born in U.S.
40. Did one or more of your parents/guardians immigrate?	39. Did one or more of your parents/guardians immigrate?
41. Is English your first language	40. Is English your first language
	41. Are you a first-generation college student?
24a. How well do you meet your college expenses - self (income)	
24b. College expenses - self (savings)	
24c. College expenses - parents and family	
24d. College expense - employer support	
24e. College expenses - scholarships and grants	
24f. College expenses - loans	

42. Highest level of education of mother	44. Highest level of education of mother
43. Highest level education of father	45. Highest level education of father
44. Best estimate of parents' total income	
45. Description of family	43. Description of family

48b. Did you participate in engineering-related research last summer?
ETD18a. During your undergraduate years, how many months of experience with part-time academic research work on campus
ETD18b. During your undergraduate years, how many months of experience with full-time academic research work on campus
48a. Did you participate in an engineering related internship/job last summer?
48c. Did you participate in engineering-related coursework last summer?
46. What did you do last summer (2006) that was particularly important to you? (open)
47. Did your experience advance your interest in studying engineering? (open)
ETD18c. During your undergraduate years, how many months of experience with part-time engineering work (internship, co-op, summer job)
ETD18d. During your undergraduate years, how many months of experience with full-time engineering work (internship, co-op, summer job)
ETD19. Short description of your experience(s) with academic research and/or professional engineering (open)

26a. Hours spent - preparing for class	29a. Hours spent - preparing for class
26b. Hours spent - working for pay	29b. Hours spent - working for pay
26c. Hours spent - participating in co-curricular activities	29c. Hours spent - participating in co-curricular activities
26d. Hours spent - relaxing and socializing	29d. Hours spent - relaxing and socializing
26e. Hours spent - providing care	29e. Hours spent - providing care
26f. Hours spent - commuting to class	29f. Hours spent - commuting to class
28. I started at this institution…	47. I started at this institution…
29. Decision to continue engineering - reasons	48. Decisions to continue engineering - reasons
30. Doubts - reasons	49. Doubts - reasons

1. What school are you currently attending?
51. How did you learn about the survey
52. Would you have been willing to take the survey if the compensation was…

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

6. If you are thinking of going to graduate school in a field OTHER THAN engineering, please mark your most probable area of study.
16. What portion of the courses you have taken during the current school year have been taught primarily by graduate students?
17a. During the current school year, what portion of your classes have used the following teaching methods - Lectures
17d. Teaching methods - Labs
17e. Teaching methods - Seminars

competitive work
to do better than other students to obtain high grades

icipate in peer study/discussion sessions with my fellow students
cipate in peer study sessions with my fellow students
collaborative work

/hich required your enagement in individual or group projects
gagement in individual and/or group projects

APPLES2

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

5. What is your current major or first choice of major (Mark one)
6. What is your second choice of major or second major/minor (if applicable)?

31. Do you see yourself continuing in an engineering major?

8. Do you intend to practice, conduct research in, or teach engineering for at least 3 years after graduation?

32. Do you see yourself pursuing a career in engineering?

33a. How likely is it that you would do each of the following after graduation?: Work in an engineering job
33b. How likely is it that you would do each of the following after graduation?: Work in a non-engineering job
33c. How likely is it that you would do each of the following after graduation?: Go to graduate school in an engineering discipline

33d. How likely is it that you would do each of the following after graduation?: Go to graduate school in a non-engineering discipline

9b. Engineers make more money than most other professionals
9e. Engineers are well paid
9g. An engineering degree will guarantee me a job when I graduate

9c. My parents would disapprove if I chose a major other than engineering

9f. My parents want me to be an engineer

9a. Technology plays an important role in solving society's problems
9d. Engineers have contributed greatly to fixing problems in the world
9n. Engineering skills can be used for the good of society

Not asked

9h. A faculty member, academic advsior, teaching assistant or other university affiliated person has encouraged and/or inspired me to study engineering

9i. A non-university affiliated mentor has encouraged and/or inspired me to study engineering.

9j. A mentor has introduced me to people and opportunities in engineering
10c. Agree/disagree: A mentor has supported my decision to major in engineering.
11d. Math ability
11e. Science ability
11g. Ability to apply math & science principles in solving real world problems

11a. Self confidence (social)
11b. Leadership ability
11c. Public speaking ability
11f. Communication skills
11h. Business ability
11i. Ability to perform in teams

10a. Creative thinking is one of my strengths (4 pt scale)
10b. I am skilled at solving problems that can have multiple solutions (4 pt scale)

11j. Critical thinking skills (5 pt scale)

12d. Math ability
12e. Science ability
12g. Ability to apply math & science principles in solving real world problems

12a. Self confidence (social)
12b. Leadership ability
12c. Public speaking ability
12f. Communication skills
12h. Business ability
12i. Ability to perform in teams

28. How much exposure have you had to a professional engineering environment as a visitor, intern, or employee

How did you gain your knowledge about the engineering profession?
29a. From being a visitor
29b. From being a co-op student or intern

29c. From being an employee
29d. From a family member
29e From a close friend
29g. From other

29f. From school-related experiences (professor, class)

30. Yes/No: Do any of your immediate family members (parents, siblings) hold an engineering degree?

26. Before college, how much knowledge did you have about the engineering profession?
27. Since entering college, how much knowledge have you gained about the engineering profession?

14a. Teaching methods - individual projects

14b. Teaching methods - team projects

22. Importance of non-engineering activities
23. Frequency of involvement in non-engineering activities

24. Level of involvement in student engineering activities such as engineering societies
25. Since coming to college, have you had any research experiences?

20a. Pressure - course load
20b. Pressure - course pace
20c. Pressure - Balance between social and academic life
18. How well are you meeting workload demands of your coursework?
19. How stressed do you feel in your coursework right now?
34. Do you have any concerns about your ability to finance your college education?

17a. Came late to liberal arts class
17b. Skipped liberal arts class
17c. Turned in liberal arts assignments that did not reflect your best work
17d. Turned in liberal arts assignments late

16a. Came late to engineering class
16b. Skipped engineering class
16c. Turned in engineering assignments that did not reflect your best work
16d. Turned in engineering assignments late

21a. Instructors during class
21b. Instructors during office hours
21c. Instructors outside of class or office hours

13a. Quality of instruction by instructors
13b.Quality of advising by instructors
13c. Availability of instructors
13d: Satisfaction: Academic advising

15. Overall quality of collegiate experience

9k. I feel good when I am doing engineering
9m. I think engineering is fun

9o. I think engineering is interesting

9l. I like to build stuff
9p. I like to figure out how things work

35. What is your cumulative GPA?
36. Sex
38. How old are you?
37. Racial or ethnic identification

39. Citizenship status
2. What is your current academic standing? (freshman, sophomore, junior, senior, 5th year senior, graduate student, other)
3. When you entered this institution, were you: (first-time, returning, transfer student)
4. What were you most interested in majoring in when you first came to university?
44. Full-time/part-time student

45. Which of the following best describes where you are living now while attending college?

40. Born in U.S.
41. Did one or more of your parents/guardians immigrate?
42. Is English your first language
43. Are you a first-generation college student?

47. Highest level of education of mother
48. Highest level education of father

46. Description of family

1. What school are you currently attending?

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

	Selected Variables and Items from PIE to APPLES1 to APPLES2	SURV-1: C1Y1A Winter 04
	OFFICIAL VARIABLES/CONSTRUCTS	
1	**1a: Academic Persistence**	Y
2	**1b: Professional Persistence**	Not Asked
3	**2a: Motivation (Financial)**	Different
4	**2b: Motivation (Family Influence)**	Different
5	**2c: Motivation (Social Good)**	Different
6	**2d: Motivation (High School Mentor Influence)**	Not Asked
7	**2e: Motivation (Mentor Influence)**	Not Asked
8	**3a: Confidence in Math & Science Skills**	Different
9	**3b: Confidence in Professional and Interpersonal Skills**	Different
10	**3c: Confidence in Solving Open-ended Problems**	Different
11	**4a: Perceived Importance in Math & Science Skills**	Different
12	**4b: Perceived Importance in Professional & Interpersonal Skills**	Different
13	**5: Knowledge of the Engineering Profession**	Not Asked
14	**5a. Knowledge of the Engineering Profession (Change over time)**	Not Asked
15	**5b. Knowledge of the Engineering Profession (Sources)**	Not Asked
16	**6a: Exposure to Project-Based Learning Methods: Individual**	Y
17	**6b: Exposure to Project-Based Learning Methods: Team**	Y
18	**7: Collaborative Work Style**	Different
19	**8: Extracurricular Fulfillment (Non-engineering)**	Not Asked
20	**8b: Extracurricular Involvement (Engineering)**	Not Asked
21	**8c: Research Experience**	Not Asked
22	**9: Curriculum Overload**	Not Asked
23	**10: Financial Difficulties**	Not Asked
24	**11a: Academic Disengagement - Liberal Arts courses**	Not Asked
25	**11b: Academic Disengagement - Engineering-Related courses**	Y
26	**11c: Academic Disengagement - Overall**	Not Complete
27	**12: Frequency of Interaction with Instructors**	Different
28	**13a: Satisfaction with Instructors**	Different
29	**13d. Satisfaction with academic advising**	Y
30	**13b: Satisfaction with Academic Facilities**	Different
31	**13c: Overall Satisfaction with Collegiate Experience**	Not Asked
32	**Intrinsic Motivation (Psychological)**	Not Asked
33	**Intrinsic Motivation (Behavioral)**	Not Asked
	DEMOGRAPHIC VARIABLES	
	Survey verification: What school are you currently attending?	Not Asked
	Expected Graduation Date	Y
	Expected GPA academic term	Not Asked
	Expected GPA overall	Not Asked
	Sex	Y
	Age	Y
	Ethnicity	Y
	Marital status	Y
	Dependents	Y

Citzenship	Y
Current academic standing	Not Asked
Traditional/nontraditional student	Not Asked
Preliminary area of interest	Not Asked
Full time/part-time student	Not Asked
Year graduated from high school	Y
High school community	Y
Average grade in high school	Y
Residence in college	Y
Roommates in college	Y
Disabilities	Y
Assistive technologies	Y
Born in U.S.	Not Asked
Parents/guardians immigrate?	Not Asked
English first language	Not Asked
First Generation College Student	Not Asked
How well do you meet your college expenses - self (income)	Y
College expenses - self (savings)	Y
College expenses - parents and family	Y
College expense - employer support	Y
College expenses - scholarships and grants	Y
College expenses - loans	Y
College expenses - other sources	Y
Highest level of education of mother	Y
Highest level education of father	Y
Best estimate parents' income	Y
Description of Family Income	Not Asked

UNOFFICIAL VARIABLES

Research: Did you participate in engineering-related research last summer?	Not Asked
Research: ETD18a. During your undergraduate years, how many months of experience with part-time academic research work on campus	Not Asked
Research: ETD18b. During your undergraduate years, how many months of experience with full-time academic research work on campus	Not Asked
Research: Did you participate in engineering-related coursework last summer?	Not Asked
Extra-curricular: Did your experience advance your interest in studying engineering? (open)	Not Asked
Extra-curricular: What did you do last summer that was particularly important to you? (open)	Not Asked
Extra-curricular: Short description of your experience(s) with academic research and/or professional engineering (open)	Not Asked
Engineering Extra-curricular: Some students participate in design competitions, internships, and clubs. In the space provided identify engineering-related activities you have participated in outside of class.(open)	Y
Engineering Profession: During your undergraduate years, how many months of experience with part-time engineering work (internship, co-op, summer job)	Not Asked

Engineering Profession: During your undergraduate years, how many months of experience with full-time engineering work (internship, co-op, summer job)	Not Asked
Engineering Profession: Did you participate in an engineering related internship/job last summer?	Not Asked
NSSE: Hours spent - preparing for class	Y
NSSE: Hours spent - working for pay	Y
NSSE: Hours spent - participating in co-curricular activities	Y
NSSE: Hours spent - relaxing and socializing	Y
NSSE: Hours spent - providing care	Y
NSSE: Hours spent - commuting to class	Y
Confirm/Doubt: I started at this institution…	Not Asked
Confirm/Doubt: Decision to continue engineering - reasons	Not Asked
Confirm/Doubt: Doubts - reasons	Not Asked
Confirm/Doubt: Identify any classes (in high school or college so far) this year that have STRONGLY REINFORCED your interest in studying engineering. (open)	Y
Confirm/Doubt: Identify any classes (in high school or college so far) this year that have STRONGLY WEAKENED your interest in studying engineering. (open)	Y

MISCELLANEOUS ITEMS NOT ASSIGNED TO A CONSTRUCT OR DELETED OVER TIME

Open-ended question: Is there anything you want to tell us about your experiences in engineering that we haven't already asked you about?	Not Asked
Grad School: If you are thinking of going to graduate school in a field OTHER THAN engineering, please mark your most probable area of study.	Y
Course taught by grad students: What portion of the courses you have taken during the current school year have been taught primarily by graduate students?	Y
Teaching methods - lectures	Y
Teaching methods - labs	Y
Teaching methods - seminars	Y
Competitive work style (personal): I am a competitive person	Not Asked
Competitive work style (personal): I strive to get higher grades than my classmates	Not Asked
Competitive work style (institutional): The educational institution I am attending promotes competitive work	Not Asked
Competitive work style (institutional): My instructors often remind students that they need to do better than other students to obtain high grades	Y
Competitive work style (institutional): I prefer keeping good ideas to myself	Not Asked
Competitive work style (institutional): My instructors grade on a curve	Y
Collaborative work style (institutional): I have easy access to work spaces where I can participate in peer study/discussion sessions with my fellow students	Y

Collaborative work style (institutional): I am encouraged by my instructors to initiate or participate in peer study sessions with my fellow students	Y
Collaborative work style (institutional): The educational institution I am attending promotes collaborative work	Not Asked
Collaborative work style (institutional): Since the beginning of fall term, how often you participated in a peer study group	Not Asked
Satisfaction with academic services: Satisfaction with tutoring	Y
Exposure to PBL Methods: Since this term, how often have you taken courses which required your enagement in individual or group projects	Not Asked
Exposure to PBL Methods: To what extent have your courses required your engagement in individual and/or group projects	Not Asked
Exposure to PBL Methods:: I have strong problem solving skills	Y
Who Am I questions	Not Asked
Confidence in computer/programming skills	Y
Perceived importance of computer skills	Y
Perceived importance of critical thinking skills	Not Asked
UPri questions - Motivation, Self-Esteem, Ethnic identity	Not Asked
Motivation (Belief That Engineers Improve Welfare of Society Through Creative Work): I enjoy figuring out how things work	Y
Motivation (Belief That Engineers Improve Welfare of Society Through Creative Work): Engineers are innovative	Y
Motivation (Belief That Engineers Improve Welfare of Society Through Creative Work): Engineers are creative	Y
I enjoy the subjects of science and math the most	Y
Creative thinking is one of my strengths	Y
Peers: Studying in a group is better than studying by myself	Y
I enjoy taking liberal arts courses more than science and math courses	Y
Peers: My friends are supportive of me when I am academically successful	Not Asked
Peers: I can count on my friends at school for emotional support when I experience academic difficulties	Not Asked
Peers: I can count on my friends at school for emotional support when I experience personal difficulties	Not Asked
Importance: Getting higher grades than my classmates	Y
Importance: Influencing social values	Y
Importance: Becoming an authority in my field	Y
Importance: Keeping goood ideas to myself unless it is to my advantage to share them	Y
Importance: Helping to promote racial understanding	Y
Importance: Becoming a community leader	Y
Importance: Helping others who are in difficulty	Y
Importance: When playing any game, playing to win	Y
Importance: Developing a meaningful philosophy of life	Y
Importance: Becoming a practicing engineer	Y
Importance: Getting along with others	Y
Importance: Working as part of a team	Y
Importance: Becoming a student government official	Y
Importance: Establishing relationships with engineering students	Y

Importance: Establishing relationships with non-engineering students	Y
Confidence: Analytical and problem solving skills	Y
Confidence: General knowledge	Y
Confidence: Knowledge of a particular field or discipline	Y
Confidence: Interest in studying engineering	Y
Satisfaction: Opportunities for community service	Y
Frequency: Felt that your courses inspired you to think in new ways	Y
Frequency: Felt you did not have enough time to pursue nonacademic activities	Y
Frequency: Worried about keeping up with your schoolwork	Y
Frequency: Felt you did not have a "social life"	Y
Frequency: Felt stressed	Y
Peers: Frequency: Participated in a peer study group	Y
Frequency: Visited or worked in a commercial engineering environment	Not Asked
Frequency: Socialized with someone of another racial/ethnic group	Not Asked
Frequency: Discussed racial issues	Not Asked
Frequency: Attended a racial/cultural awareness workshop/event	Not Asked
Came late to math class	Y
Skipped math class	Y
Turned in math assignments that did not reflect your best work	Y
Turned in math assignments late	Y
Thought math classes were boring	Y
Came late to science class	Y
Skipped science class	Y
Turned in science assignments that did not reflect your best work	Y
Turned in science assignments late	Y
Thought science classes were boring	Y
Frequency: Asked for advice about managing your coursework	Not Asked
Frequency: Worked with people who have diverse backgrounds	Not Asked
Frequency: Spent time in a non-academic role	Not Asked
Frequency: Requested feedback on course assignments from an instructor	Not Asked
Frequency: "Crammed" all night studying for an exam or completing an assignment due the next day	Not Asked
Frequency: Worked collaboratively on an assignment that was particularly challenging or complex	Not Asked
Frequency: Decided to turn in "C" quality work over spending considerably more time to turn in "A" quality work	Not Asked
Frequency: Had a research experience on a faculty or graduate student project	Not Asked
Frequency: Prioritized a good grade in a general education course over a passing grade in a math, science, engineering course	Not Asked
Frequency: Prioritized a good grade in a math, science, or engineering course over a passing grade in a general education course	Not Asked
Frequency: Studied regularly in blocks of 2 hours or more	Not Asked
Frequency: Took a seminar course to discuss and argue ideas with other students	Not Asked
Frequency: Reduced time spent on course work to have more time for recreation	Not Asked

Frequency: Asked for advice about managing your college experience	Not Asked
Frequency: Created a project outside of your academic work with the supervision of a professor	Not Asked
Frequency: Monitored how you spent your time on your course work	Not Asked
Frequency: Asked for help to strengthen a particular skill (e.g., writing, math)	Not Asked
Frequency: Reduced your course load to improve your grades	Not Asked
Confidence: Self-confidence (intellectual)	Y
Frequency: Worked on class projects	Y
Frequency: Held a study group	Y
Frequency: Took a specific lecture-type class	Y
Frequency: Took a specific laboratory class	Y
Frequency: Worked on homework	Y
Frequency: Reviewed class material	Y
Frequency: Prepared for class exams	Y
Frequency: Wrote class reports	Y
In what ways do you interact with other engineering students outside the classroom? (open)	Y
When and under what circumstances (if any) do you rely on you friends at school for emotional support? (open)	Not Asked
Do you feel uncomfortable seeking emotional support from your friends at school? If you do, under what circumstances? (open)	Not Asked
What is the race/ethnicity of your six closest friends at school? (open)	Not Asked
43-46. Phil Bell's technology questions: How often do you use the following technologies in your personal life outside of school/school-related activities?	Y
What is the first word or phrase you think of to describe your favorite professor?	Y
Do you believe your peers would agree with this description?	Y
What intellectual, personal, financial, and other challenges do you feel you may need to overcome ito graduate with an engineering degree?	Y

UPri QUESTIONS

Group Identification Scale: I identify with engineering students	Not Asked
Group Identification Scale: I am glad to belong to a group of engineering students	Not Asked
Group Identification Scale: I feel held back by engineering students	Not Asked
Group Identification Scale: I think engineering students work well together	Not Asked
Group Identification Scale: I see myself as an important part of engineering students on campus	Not Asked
Group Identification Scale: I fit in well with the other engineering students	Not Asked
Group Identification Scale: I consider engineering students to not be important	Not Asked
Group Identification Scale: I feel uneasy with other engineering students	Not Asked
Group Identification Scale: I feel strong ties to engineering students	Not Asked
SIMS: Intrinsic Motivation: I think engineering is interesting	Not Asked
SIMS: Intrinsic Motivation: I think engineering is pleasant	Not Asked

SIMS: Intrinsic Motivation: Majoring in engineering is fun	Not Asked
SIMS: Intrinsic Motivation: I feel good when I am doing engineering activities	Not Asked
SIMS: Identified Regulation: I am majoring in engineering for my own good	Not Asked
SIMS: Identified Regulation: I think engineering is good for me	Not Asked
SIMS: Identified Regulation: It is my personal decision	Not Asked
SIMS: Identified Regulation: I believe engineering is important for me	Not Asked
SIMS: Amotivation: There may be good reasons to major in engineering, but personally, I don't see any	Not Asked
SIMS: Amotivation: I am majoring in (considering majoring in) engineering, but I am not sure if it is worth it	Not Asked
SIMS: Amotivation: I don't know. I don't see what the activity brings me	Not Asked
SIMS: Amotivation: I am doing it, but am not sure it is a good thing to pursue	Not Asked
SIMS: External Regulation: I am supposed to major in engineering	Not Asked
SIMS: External Regulation: Majoring in engineering is something that I have to do	Not Asked
SIMS: External Regulation: I don't have any choice	Not Asked
SIMS: External Regulation: I feel that I have to do it	Not Asked
Self-Esteem: On the whole, I am satisfied with myself	Not Asked
Self-Esteem: At times, I think I am no good at all	Not Asked
Self-Esteem: I feel that I have a number of good qualities	Not Asked
Self-Esteem: I am able to do things as well as most other people	Not Asked
Self-Esteem: I feel I do not have much to be proud of	Not Asked
Self-Esteem: I certainly feel useless at times	Not Asked
Self-Esteem: I feel that I'm a person of worth, at least on an equal plane with others	Not Asked
Self-Esteem: I wish I could have more respect for myself	Not Asked
Self-Esteem: All in all, I am inclined to feel that I am a failure	Not Asked
Self-Esteem: I take a positive attitude toward myself	Not Asked
MIBI Centrality Engineering: Overall, being an engineering student has very little to do with how I feel about myself	Not Asked
MIBI Centrality Engineering: In general, being an engineering student is an important part of my self image	Not Asked
MIBI Centrality Engineering: My destiny is tied to the destiny of other engineering students	Not Asked
MIBI Centrality Engineering: Being an engineering student is unimportant to my sense of what kind of person I am	Not Asked
MIBI Centrality Engineering: I have a strong sense of belonging to the engineering student community	Not Asked
MIBI Centrality Engineering: I have a strong attachment to other engineering students	Not Asked
MIBI Centrality Engineering: Being an engineering student is an important reflection of who I am	Not Asked
MIBI Centrality Engineering: Being an engineering student is not a major factor in my social relationships	Not Asked
MIBI Private Regard Engineering: I feel good about engineers	Not Asked
MIBI Private Regard Engineering: I am happy that I am going to be an engineer	Not Asked

MIBI Private Regard Engineering: I feel that engineers have made major accomplishments and advancements	Not Asked
MIBI Private Regard Engineering: I often regret that I am going to become an engineer	Not Asked
MIBI Private Regard Engineering: I am proud to be an engineer	Not Asked
MIBI Private Regard Engineering: I feel that the engineering community has made valuable contributions to this society	Not Asked
MIBI Public Regard Engineering: Overall, engineers are considered good by others	Not Asked
MIBI Public Regard Engineering: In general, others respect engineers	Not Asked
MIBI Public Regard Engineering: Most people consider engineers, on the average, to be more ineffective than other professionals	Not Asked
MIBI Public Regard Engineering: Engineers are not respected by the broader society	Not Asked
MIBI Public Regard Engineering: In general, other professionals view engineers in a positive manner	Not Asked
MIBI Public Regard Engineering: Society views engineers as an asset+B283	Not Asked
MIBI Centrality Ethnicity: Overall, being a member of my ethnic group has very little to do with how I feel about myself	Not Asked
MIBI Centrality Ethnicity: In general, being a member of my ethnic group is an important part of my self image	Not Asked
MIBI Centrality Ethnicity: My destiny is tied to the destiny of other members of my ethnic group	Not Asked
MIBI Centrality Ethnicity: Being a member of my ethnic group is unimportant to my sense of what kind of person I am	Not Asked
MIBI Centrality Ethnicity: I have a strong sense of belonging to my ethnic group community	Not Asked
MIBI Centrality Ethnicity: I have a strong attachment to other members of my ethnic group	Not Asked
MIBI Centrality Ethnicity: Being a member of my ethnic group is an important reflection of who I am	Not Asked
MIBI Centrality Ethnicity: Being a member of my ethnic group is not a major factor in my social relationships	Not Asked
MIBI Centrality Gender: Overall, being a member of my gender has very little to do with how I feel about myself	Not Asked
MIBI Centrality Gender: In general, being a member of my gender is an important part of my self-image	Not Asked
MIBI Centrality Gender: My destiny is tied to the destiny of other members of my gender	Not Asked
MIBI Centrality Gender: Being a member of my gender is unimportant to my sense of what kind of person I am	Not Asked
MIBI Centrality Gender: I have a strong sense of belonging to my gender community	Not Asked
MIBI Centrality Gender: I have a strong attachment to other members of my gender	Not Asked
MIBI Centrality Gender: Being a member of my gender is an important reflection of who I am	Not Asked
MIBI Centrality Gender: Being a member of my gender is not a major factor in my social relationships	Not Asked

KEY

Different

SURV 2: C1Y1B Spring 04	SURV 3: C1Y2A Fall 04	SURV 4: C1Y2B Spring 05	SURV 5: C1Y3A Fall 05	SURV 6: C1Y3B Spring 06	SURV 7: C1Y4A Spring 07
Y	Y	Y	Y	Y	Y
Not Asked	Y	Y	Y	Y	Y
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Y	Not Asked	Not Asked	Not Asked	Not Asked	Not Asked
Not Asked	Y	Y	Y	Y	Y
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Different	Y	Y	Y	Y	Not Asked
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	Cronbach's Alphas for Multi-item Scales	SURV-1: C1Y1A Winter 04 Frosh	SURV 2: C1Y1B Spring 04 Frosh	SURV 3: C1Y2A Fall 04 Soph
	OFFICIAL VARIABLES/CONSTRUCTS			
1	1a: Academic Persistence	Single Item	Single Item	Single Item
2	1b: Professional Persistence	Single Item	Single Item	Single Item
3	2a: Motivation (Financial)	Different	Y	Y
4	2b: Motivation (Family Influence)	Different	Y	Y
5	2c: Motivation (Social Good)	Different	Y	Y
6	2d: Motivation (High School Mentor Influence)	---	Y	---
7	2e: Motivation (Mentor Influence)	---	---	Y
8	3a: Confidence in Math & Science Skills	Different	Y	Y
9	3b: Confidence in Professional and Interpersonal Skills	Different	Y	Y
10	3c: Confidence in Solving Open-ended Problems	Different	Y	Y
11	4a: Perceived Importance in Math & Science Skills	Different	Y	Y
12	4b: Perceived Importance in Professional & Interpersonal Skills	Different	Different	Different
13	5: Knowledge of the Engineering Profession	---	Y	Y
14	5a. Knowledge of the Engineering Profession (Change over time)	---	---	---
15	5b. Knowledge of the Engineering Profession (Sources)	---	---	---
16	6a: Exposure to Project-Based Learning Methods: Individual	Single Item	Single Item	Single Item
17	6b: Exposure to Project-Based Learning Methods: Team	Single Item	Single Item	Single Item
18	7: Collaborative Work Style	Different	Different	Y
19	8: Extracurricular Fulfillment (Non-engineering)	---	---	Y
20	8b: Extracurricular Involvement (Engineering)	---	---	---
21	8c: Research Experience	---	---	---
22	9: Curriculum Overload	---	---	Y
23	10: Financial Difficulties	---	---	Single Item
24	11a: Academic Disengagement - Liberal Arts courses	---	Y	Y
25	11b: Academic Disengagement - Engineering-Related courses	Y	Y	Y
26	11c: Academic Disengagement - Overall	Not Complete	Y	Y
27	12: Frequency of Interaction with Instructors	Different	Different	Y
28	13a: Satisfaction with Instructors	Different	Different	Y
29	13d. Satisfaction with academic advising	Single Item	Single Item	Single Item
30	13b: Satisfaction with Academic Facilities	Different	Y	Y

31	**13c: Overall Satisfaction with Collegiate Experience**	---	Single Item	Single Item
32	**Intrinsic Motivation (Psychological)**	---	---	---
33	**Intrinsic Motivation (Behavioral)**	---	---	---

KEY

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N/A	Alpha cannot be calculated be
Single item	Single item variable; alpha can

SURV 4: C1Y2B Spring 05 Soph	SURV 5: C1Y3A Fall 05 Junior	SURV 6: C1Y3B Spring 06 Junior	SURV 7: C1Y4A Spring 07 Senior	APPLES1 Spring 07 Overall	APPLES1 Spring 07 Frosh	APPLES1 Spring 07 Soph	APPLES1 Spring 07 Junior	APPLES1 Spring 07 Senior
Single Item	Single Item	Single Item	Single Item	Single Item				
Single Item	Single Item	Single Item	Single Item	Single Item				
Y	0.76	Y	Y	0.82				
Y	0.85	Y	Y	0.87				
Y	0.70	Y	Y	0.64				
---	---	---	---	---				
Y	0.65	Y	Y	0.60				
Y	0.83	Y	Y	0.82				
Y	0.84	Y	Y	0.80				
Y	0.69	Y	Y	0.68				
Y	0.79	Y	Y	0.79				
Y	0.79	Y	Y	0.83				
Y	Y	Y	Y	---				
---	---	---	---	N/A				
---	---	---	---	N/A				
Single Item	Single Item	Single Item	Single Item	---				
Single Item	Single Item	Single Item	Single Item	---				
Y	Y	Y	---	---				
Y	0.85	Y	Y	0.82				
---	---	---	---	Single Item				
---	---	Single Item	Single Item	Single Item				
Y	0.81	Y	Y	0.78				
Single Item	Single Item	Single Item	Single Item	Single Item				
Y	0.58	Y	Y	0.88				
Y	0.70	Y	Y	0.86				
Y	Y	Y	Y	Y				
Y	0.69	Y	Y	0.74				
Y	0.84	Y	Y	0.72				
Single Item	Single Item	Single Item	---	Single Item				
Y	Y	Y	Y	---				

Single Item	Single Item	Single Item	Single Item	Single Item				
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cause it's not a scale
not be calculated

APPLES2 Winter 08 Overall	APPLES2 Winter 08 Frosh	APPLES2 Winter 08 Soph	APPLES2 Winter 08 Junior	APPLES2 Winter 08 Senior
Single Item				
Single Item				
Y				
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