

Survey Codebook

Q1: Rank the top 3 disciplines you are MOST likely to enter upon graduation (select one per column)

Q1a = Aerospace/Ocean/Astro Engineering

Q1b = Agricultural/Biological/Biological Systems Engineering

Q1c = Bioengineering/Biomedical Engineering

Q1d = Civil Engineering (non-structural)

Q1e = Chemical Engineering

Q1f = Construction Engineering/Management

Q1g = Computer Engineering

Q1h = Electrical Engineering

Q1i = Environmental/Ecological Engineering

Q1j = Industrial/Systems Engineering

Q1k = Materials Engineering

Q1l = Mechanical/Manufacturing Engineering

Q1m = Mining Engineering

Q1n = Nuclear Engineering

Q1o = Software Engineering/Computer Science

Q1p = Structural/Architectural Engineering

Q1q = Other engineering

Q1r = Business (non-engineering role)

Q1s = Medical (non-engineering role)

Q1t = Other (non-engineering)

VALUES: 1 = "Most likely", 2 = "Second likely", 3 = "Third likely", " " = missing

Q2: How likely is it that you will enter one of the following sectors?

Q2a = Private/Corporate

Q2b = Non-profit/NGO

Q2c = Government/Public Policy

Q2d = Education

Q2e = Entrepreneurship/Start-Up

Q2f = Healthcare

Q2g = Other

VALUES: 0 through 4 (rating scale), 1 = "Not at all likely", 4 = "Extremely likely", " " = missing

Q3: Which of the following are you likely to pursue in the next five years? (Mark all that apply)

Q3a = MA/MS (non-engineering)

Q3b = ME/MS (engineering)

Q3c = PhD (engineering)

Q3d = MBA

Q3e = JD (Law)

Q3f = MD

Q3g = Other

VALUES: Blank = not selected, 1 = yes, . = none selected

Q4: How important are the following factors to your future career satisfaction?

Q4a = Making money

Q4b = Becoming well known

Q4c = Helping others

Q4d = Supervising others

Q4e = Having job security and opportunities

Q4f = Working with people

Q4g = Inventing/designing things

Q4h = Developing new knowledge and skills

Q4i = Having lots of personal and family time

Q4j = Having an easy job

Q4k = Being in an exciting environment

Q4l = Solving societal problems

Q4m = Making use of my talents and abilities

Q4n = Doing hands-on work

Q4o = Applying math and science

Q4p = Volunteering with charity groups

VALUES: 0 through 4 (rating scale), 1 = "Not at all important", 4 = "Very important", " " = missing

Q5: Which of these topics, if any, do you hope to directly address in your career? (Mark all that apply)

Q5a = Energy (supply or demand)

Q5b = Disease

Q5c = Poverty and distribution of wealth

Q5d = Climate change

Q5e = Terrorism and war

Q5f = Water supply (e.g. shortages, pollution)

Q5g = Food availability

Q5h = Opportunities for future generations

Q5i = Opportunities for women and/or minorities

Q5j = Environmental degradation

VALUES: Blank = not selected, 1 = yes, . = none selected

Q6: While an undergraduate, have you don (or are you currently doing) any of the following?

Q6a = Conducted engineering research with a faculty member

Q6b = Participated in study abroad

Q6c = Contributed to a disciplinary-specific society

Q6d = Worked or volunteered in a developing country

Q6e = Worked for an engineering company as an intern/co-op

Q6f = Lived in a residential or dorm-based engineering program/engineering living-learning community

Q6g = Contributed as a member of an organization for women and/or minorities in engineering

Q6h = Acted as a member of an outreach club (e.g. Habitat for Humanity, Big Brothers Big Sisters)
Q6i = Traveled with an international service group (e.g. Engineers Without Borders, Students Helping Honduras, Bridges to Prosperity)
Q6j = Participated in an organization that focuses on environmental sustainability
Q6k = Work-study or other type of job to pay for college
VALUES: 1 = “Never”, 2 = “Limited”, 3 = “Half a semester”, 4 = “One full semester”, 5 = “More than one full semester”, " " = missing

Q7: Please indicate whether the following topics were covered in your courses. (Mark all that apply)

Q7a = Energy supply (e.g. fossil fuels, nuclear, solar, wind)
Q7b = Energy demand (e.g. in buildings, transportation)
Q7c = Climate change
Q7d = Terrorism & war
Q7e = Water supply (e.g. shortages, pollution, conflict)
Q7f = Population growth
Q7g = Food availability
Q7h = Disease
Q7i = Poverty and distribution of wealth and resources
Q7j = Sustainable development
Q7k = Life cycle analysis methods (e.g. cradle-to-grave)
Q7l = Bio-mimicry
Q7m = Environmental degradation
Q7n = Providing opportunities for future generations
Q7o = Female pioneers in engineering
Q7p = Under-representation of females in engineering
Q7q = Under-representation of racial minorities in engineering
Q7r = Engineering careers, stages, or options
Q7s = Benefits of becoming an engineer
Q7t = Students’ stories about engineering/science
Q7u = Teachers’ stories about their engineering/science experiences
VALUES: 1 = “Discipline-specific engineering”, 2 = “Engineering elective”, 3 = “Non-engineering elective”, 4 = “Other course(s)”, " " = missing

Q8: Please indicate how often the following occurred in your most recent engineering design course.

Q8a = The teacher lectured to the class
Q8b = We spent time doing individual work in class
Q8c = Concepts/ideas were introduced before formulas/equations
Q8d = We spent time doing small group activities
Q8e = We worked on labs or projects
Q8f = Classmates taught each other
Q8g = Whole-class discussions were held
Q8h = The teacher gave demonstrations

Q8i = Topics were relevant to my career goals

Q8j = The teacher related course concepts to contemporary issues in the world

Q8k = You asked questions, answered questions, or made comments

Q8l = Teacher called on students for responses (not voluntary)

Q8m = Other students asked questions, answered questions, or made comments

Q8n = The teacher related course concepts to helping people

VALUES: 1 = "Never", 2 = "Rarely", 3 = "Monthly", 4 = "Weekly", 5 = "Daily", " " = missing

Q9: Please answer the following questions:

Q9a = Did you minor in or have a concentration related to sustainability?

Q9b = Did your most recent in-major engineering design project contribute to helping people in need?

Q9c = Did your most recent in-major engineering design course include an international service component?

VALUES: 1 = "Yes", 2 = "No", " " = missing

Q10: Please indicate below the extent to which the following reasons apply to why you chose to major in engineering:

Q10a = I like solving problems

Q10b = Engineers make more money than most other professionals

Q10c = Engineers help people

Q10d = I am good at math and science

Q10e = My parent(s) want me to be an engineer

Q10f = An engineering degree will guarantee me a job when I graduate

Q10g = I think engineering is fun

Q10h = I like to figure out how things work

Q10i = A faculty member, academic advisor, teaching assistant, or other university affiliated person has encouraged and/or inspired me to study engineering

VALUES: 0 through 4 (rating scale), 1 = "Strongly disagree", 4 = "Strongly agree", " " = missing

Q11: To what extent do you agree or disagree with the following statements:

Q11a = I see myself as an engineer

Q11b = My professors see me as an engineer

Q11c = My peers see me as an engineer

Q11d = My parents see me as an engineer

Q11e = I have had experiences in which I was recognized as an engineer

Q11f = I am interested in learning more about engineering

Q11g = I find fulfillment in doing engineering

Q11h = I enjoy learning engineering

Q11i = I understand concepts I have studied in engineering

Q11j = I can do well on engineering exams

Q11k = I am confident that I can understand engineering in class

Q11l = I am confident that I can understand engineering outside of class

Q11m = Others ask me for help in my classes

Q11n = I can overcome setbacks in my engineering courses

VALUES: 0 through 4 (rating scale), 0 = "Strongly disagree", 4 = "Strongly agree", " " = missing

Q12: To what extent do you disagree or agree with the following:

Q12a = Engineering can improve our society

Q12b = I see engineering all around me

Q12c = Engineering can improve quality of life

Q12d = Engineering allows me to think deeply about problems

Q12e = I can make an impact on people's lives through engineering

Q12f = Engineering knowledge is for the advancement of human welfare

Q12g = Engineering can improve societies globally

Q12h = Engineering will give me the tools and resources to make an impact

Q12i = Engineering can help me improve my community

VALUES: 0 through 4, 0 = "Strongly disagree", 4 = "Strongly agree", " " = missing

Q13: How much do you agree with the following statements:

Q13a = I sometimes find it difficult to see things from another person's point of view

Q13b = I try to look at everybody's side of a disagreement before I make a decision

Q13c = When I am upset at someone, I usually try to "put myself in their shoes" for a while

Q13d = Before criticizing somebody, I try to imagine how I would feel if I were in their place

Q13e = I believe that there are two sides to every question and try to look at them both

Q13f = I sometimes try to understand my friends better by imagining how things look from their perspective

Q13g = If I am sure I am right about something, I don't waste much time listening to other people's arguments

VALUES: 0 through 4, 0 = "Strongly disagree", 4 = "Strongly agree", " " = missing

Q14: To what extent do you disagree or agree with the following.

Q14a = I seek input from those with a different perspective from me

Q14b = I identify relationships between topics from different courses

Q14c = I analyze projects broadly to find a solution that will have the greatest impact

Q14d = When problem solving, I focus on the relationship between issues

Q14e = I hope to gain general knowledge across multiple fields

Q14f = I often learn from my classmates

Q14g = I seek feedback and suggestions for personal improvement

VALUES: 0 through 4, 0 = "Strongly disagree", 4 = "Strongly agree", " " = missing

Q15: How confident are you in your ability to do the following:

Q15a = Find sources of inspiration not obviously related to a given problem

Q15b = Effectively work on a problem that does not have an obvious solution

Q15c = Change the definition of a problem you are working on

Q15d = Adapt an engineering solution for a culture different from your own

Q15e = Shape or change your external environment to help you be more creative

Q15f = Share your work with others before it is finished

Q15g = Try an approach to a problem that may not be the final or best solution

Q15h = Continue work on a problem after experiencing a significant failure

Q15i = Help others be more creative

Q15j = Identify and implement ways to enhance your own creativity

Q15k = Explicitly define or describe your creative process

Q15l = Solve problems in ways that others would consider creative

VALUES: 0 through 4, 0 = "Not confident at all", 4 = "Very confident", " " = missing

Q16: How interested are you in working on the following solutions in your career?

Q16a = Redesigning conventional processes in order to minimize energy consumption

Q16b = Developing technologies that improve energy efficiency

Q16c = Creating ways to reduce carbon dioxide emissions

Q16d = Spreading sustainability awareness in my community

Q16e = Working on renewable energy technologies, such as solar and wind power

Q16f = Improving infrastructure to make it more resilient to extreme weather

Q16g = Working alongside your local government to create legislation to mitigate climate change

Q16h = Building computers capable of emulating human intelligence

Q16i = Developing systems that use genetic information to help people (i.e. drugs, vaccines)

Q16j = Countering biological attacks and pandemics through engineering

Q16k = Protecting the nation against cyber-threats

Q16l = Advancing technologies to provide clean drinking water

VALUES: 0 through 4 (rating scale), 0 = "Not very interested", 4 = "Very interested", " " = missing

Q17: In your opinion, to what extent are the following associated with the field of engineering?

Q17a = Creating economic growth

Q17b = Preserving national security

Q17c = Improving quality of life

Q17d = Saving lives

Q17e = Caring for communities

Q17f = Protecting the environment

Q17g = Including women as participants in the field

Q17h = Including racial and ethnic minorities as participants in the field

Q17i = Addressing societal concerns

Q17j = Feeling a moral obligation to other people

VALUES: 0 through 4 (rating scale), 0 = "Not at all", 4 = "Very much so", " " = missing

Q18: To what extent do you disagree or agree with the following.

Q18a = We can pursue sustainability without lowering our standard of living

Q18b = Human ingenuity will ensure that we do not make the earth unlivable

Q18c = I feel a responsibility to deal with environmental problems

Q18d = Environmental problems make the future look hopeless

Q18e = I can personally contribute to a sustainable future

Q18f = Nothing I can do will make things better in other places on the planet

Q18g = Pursuit of sustainability will threaten jobs for people like me

Q18h = Sustainable options typically cost more

Q18i = I have the knowledge to understand most sustainability issues

Q18j = I think of myself as part of nature, not separate from it

Q18k = We should be taking stronger actions to address climate change

Q18l = Engineers are responsible for the majority of environmental problems society faces today

VALUES: 0 through 4 (rating scale), 0 = “Strongly disagree”, 4 = “Strongly agree”, " " = missing

Q19: To what extent do you agree with the following:

Q19a = We are approaching the limit of the number of people the earth can support

Q19b = When humans interfere with nature, it often produces disastrous consequences

Q19c = Humans are seriously abusing the environment

Q19d = Plants and animals have as much right as humans to exist

Q19e = Despite our special abilities, humans are still subject to the laws of nature

Q19f = The Earth is like a spaceship with very little room and resources

Q19g = The balance of nature is very delicate and easily upset

Q19h = If things continue on their present course, we will soon experience a major ecological catastrophe

VALUES: 0 through 4 (rating scale), 0 = “Strongly disagree”, 4 = “Strongly agree”, " " = missing

Q20: How much do you agree or disagree with the following statements:

Q20a = I am sure that global warming is happening

Q20b = Global warming is caused by humans

Q20c = I do not believe global warming is happening

Q20d = Global warming is an important issue to me personally

Q20e = My opinions about global warming are not changing

VALUES: 0 through 4 (rating scale), 0 = “Strongly disagree”, 4 = “Strongly agree”, " " = missing

Q21: Which of the following has contributed the most to your understanding of global climate change?

Q21a = College courses (professors, textbooks)

Q21b = Internet, books, newspapers, or magazines I have read on my own

Q21c = Friends or family members (including parents)

Q21d = Scientific/academic publications

Q21e = Climate scientists

Q21f = Mainstream media

VALUES: 0 through 4 (rating scale), 0 = “Not at all”, 4 = “A lot”, " " = missing

Q22: Please answer to the best of your knowledge:

Q22 = What percentage of climate scientists think that human-caused global warming is happening?

VALUES: 1 = “0-10”, 2 = “11-50”, 3 = “51-89”, 4 = “90-100%”, " " = missing

Q23: I believe that a cause of global climate change is...

Q23a = Burning fossil fuels

Q23b = Nuclear power generation

Q23c = The ozone hole in the upper atmosphere

Q23d = Livestock production

Q23e = Dumping trash into our oceans

Q23f = Waste rotting in our landfills

Q23g = Agricultural use of chemical fertilizers

Q23h = Deforestation

Q23i = Volcanic eruptions

Q23j = Acid rain

VALUES: 0 through 4 (rating scale), 0 = "Strongly disagree", 4 = "Strongly agree", " " = missing

Q24: I believe a way to help reduce or slow down climate change is...

Q24a = Building more nuclear power stations instead of coal power stations

Q24b = Planting more trees in the world

Q24c = Making more of our electricity from renewable energy resources

Q24d = Recycling more

Q24e = Not wasting electricity

Q24f = Fertilizing the oceans to make algae grow

Q24g = Reducing air pollution from toxic chemicals

Q24h = Changing lifestyles to reduce consumption

Q24i = Limiting the use of aerosol spray cans

Q24j = Increasing public transportation

Q24k = Eating less meat

VALUES: 0 through 4 (rating scale), 0 = "Strongly disagree", 4 = "Strongly agree", " " = missing

Q25: Which of the following... (Mark one per row)

Q25a = is the most abundant greenhouse gas?

Q25b = amplifies the greenhouse gas effect the most?

Q25c = should we be most concerned about when thinking about global warming?

VALUES: 1 = "Carbon Dioxide CO₂", 2 = "Water vapor H₂O", 3 = "Methane CH₄", 4 = "Oxygen O₂", 5 = "Ozone O₃", " " = missing

Q26: How much do you agree or disagree with the following statements about Earth's climate?

Q26a = The Earth's climate has remained pretty much the same for millions of years

Q26b = The greenhouse effect and global climate change are likely unrelated

Q26c = Global warming is happening because too many of the sun's rays get to the earth

Q26d = Global climate change is accelerated by the melting of snow and ice-covered surfaces

Q26e = If human civilization had never developed, there would be no greenhouse effect

Q26f = An increase in the greenhouse effect is causing global climate change

Q26g = Climate and weather are basically the same thing

Q26h = There is no definite proof that either the greenhouse effect or global climate change exist

VALUES: 0 through 4 (rating scale), 0 = "Strongly disagree", 4 = "Strongly agree", " " = missing

Q27: Global warming will start to have serious impacts on...

Q27a = me personally

Q27b = my family

Q27c = people in my community

Q27d = people in the United States

Q27e = people in other modern industrialized countries

Q27f = people in developing countries

Q27g = plant and animal species

Q27h = the world's poor

Q27i = the natural environment

VALUES: 1 = "Now", 2 = "10 yrs", 3 = "25 yrs", 4 = "50 yrs", 5 = "Never", " " = missing

Q28: I believe that global warming is a(n)...

Q28a = environmental issue

Q28b = moral issue

Q28c = religious issue

Q28d = social justice (fairness issue)

Q28e = political issue

Q28f = scientific issue

Q28g = engineering issue

Q28h = health issue

Q28i = economic issue

Q28j = national security issue

Q28k = agricultural (farming, food) issue

Q28l = poverty issue

VALUES: 0 through 4 (rating scale), 0 = "Strongly disagree", 4 = "Strongly agree", " " = missing

Q29: What is your current major field of study? Please choose only one of the following.

VALUES:

1 = Aerospace/Ocean/Astro Engineering

2 = Agricultural/Biological/Biological Systems Engineering

3 = Bioengineering/Biomedical Engineering

4 = Civil Engineering (non-structural)

5 = Chemical Engineering

6 = Constructional Engineering/Management

7 = Computer Engineering

8 = Electrical Engineering

9 = Engineering Physics

10 = Environmental/Ecological Engineering

11 = Industrial/Systems Engineering

12 = Material Engineering

13 = Mechanical/Manufacturing Engineering

14 = Mining Engineering

15 = Nuclear Engineering

16 = Software Engineering/Computer Science

17 = Structural/Architectural Engineering

18 = General Engineering

" " = missing

Q30: What year are you in college?

VALUES:

1 = 1st Year

2 = 2nd Year

3 = 3rd Year
4 = 4th Year
5 = 5th Year
6 = Other
" " = missing

Q31: What have your in-major grades been up to now at this institution?

VALUES:

1 = A
2 = A-
3 = B+
4 = B
5 = B-
6 = C+
7 = C
8 = C-
9 = D or lower
" " = missing

Q32: Generally speaking, do you usually think of yourself as republican, democrat, independent, or something else?

VALUES:

1 = Republican
2 = Democrat
3 = Independent
4 = Other
" " = missing

Q33: What is your religious affiliation?

VALUES:

1 = Protestant (Christian)
2 = Jewish
3 = Muslim
4 = Catholic
5 = Latter Day Saints
6 = Buddhist
7 = Hindu
8 = Spiritual, but not committed to particular faith
9 = Atheist
10 = Agnostic
11 = Not Listed
Q33_writein = write in response
12 = Prefer not to answer
" " = missing

Q34: How active do you consider yourself in the practice of your religious affiliation?

VALUES:

- 1 = Very active
- 2 = Somewhat active
- 3 = Not very active
- 4 = Inactive
- 5 = Not applicable
- 6 = Prefer not to answer
- " " = missing

Q35: Which of the following people have contributed to your selection of a career path?

(Mark all the apply)

- Q35a = Mother/female guardian
 - Q35b = Father/male guardian
 - Q35c = Siblings
 - Q35d = Other relative
 - Q35e = Sports coach
 - Q35f = Contact with someone in that major/career path
 - Q35g = High school counselor/teacher
 - Q35h = University counselor
 - Q35i = University professor
- VALUES: Blank = not selected, 1 = yes, . = none selected

Q36: What was the highest level of education for your parents/guardians?

- Q36a = Male parent/guardian
- Q36b = Female parent/guardian

VALUES:

- 1 = Less than high school diploma
- 2 = High school diploma/GED
- 3 = Some college or associate/trade degree
- 4 = Bachelor's degree
- 5 = Master's degree or higher
- 6 = Don't know
- " " = missing

Q37: What is your gender?

VALUES:

- 1 = Male
- 2 = Female
- 3 = Non-binary
- 4 = Not listed
- Q37_writein = write in response
- " " = missing

Q38: What is your sexual orientation?

VALUES:

1 = Straight/Heterosexual
2 = Gay or Lesbian
3 = Bisexual
4 = Not listed
Q38_writein = write in response
" " = missing

Q39: With which races/ethnicities do you identify? (Mark all that apply)

Q39a = African-American or Black
Q39b = Caucasian or White
Q39c = South Asian (e.g. Indian, Pakistani, Bangladeshi, Sri Lankan, etc.)
Q39d = East Asian (e.g. Chinese, Korean, Japanese, etc.)
Q39e = Other Asian
Q39f = Native Hawaiian or Pacific Islander
Q39g = American Indian or Alaskan Native
Q39h = Hispanic/Latino
Q39i = Not Listed
Q39_write in = write in response
VALUES: Blank = not selected, 1 = yes, . = none selected

Q40: To help us estimate the size of the community you come from, please provide your home ZIP code.

VALUES: U.S. 5 digit ZIP code