

AUDIOBOOK LISTENER'S GUIDE

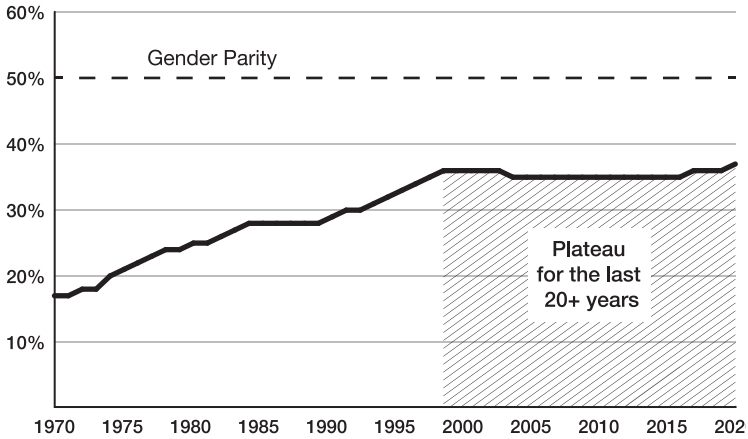
**PULL DON'T PUSH
WHY STEM MESSAGING TO
GIRLS ISN'T WORKING & WHAT
TO DO INSTEAD**

Julie Newman

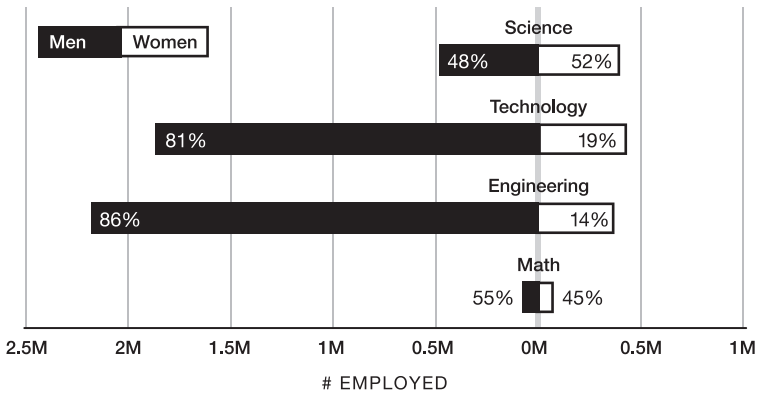
For more resources, visit www.juliejnewman.com

INTRODUCTION

PERCENT OF STEM BACHELOR'S DEGREES EARNED BY WOMEN

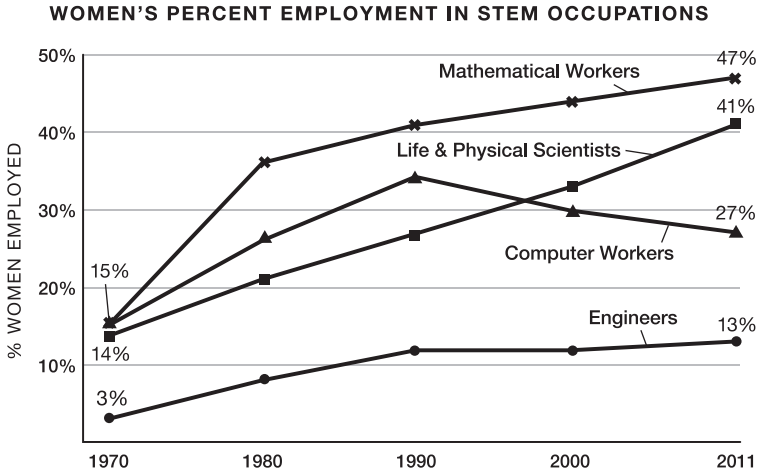


GENDER RATIOS IN STEM JOBS 2019



Chapter 1

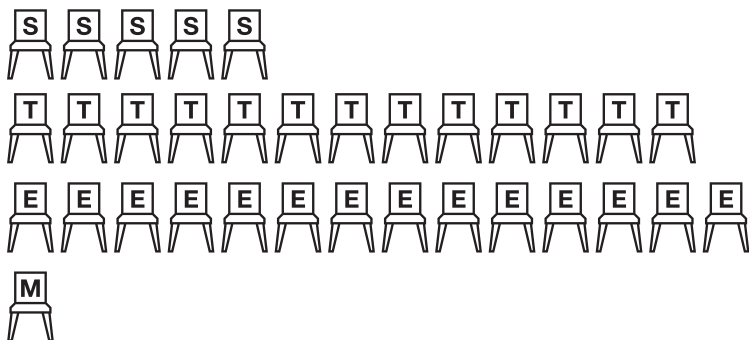
WHAT GOT US HERE WON'T GET US THERE



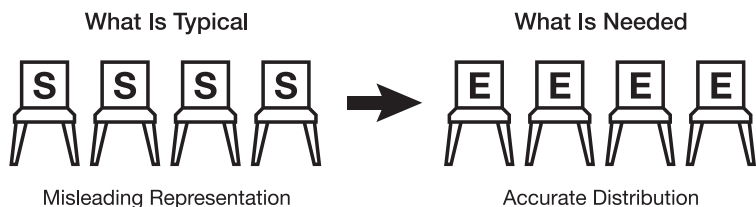
Chapter 2

ALPHABET SOUP

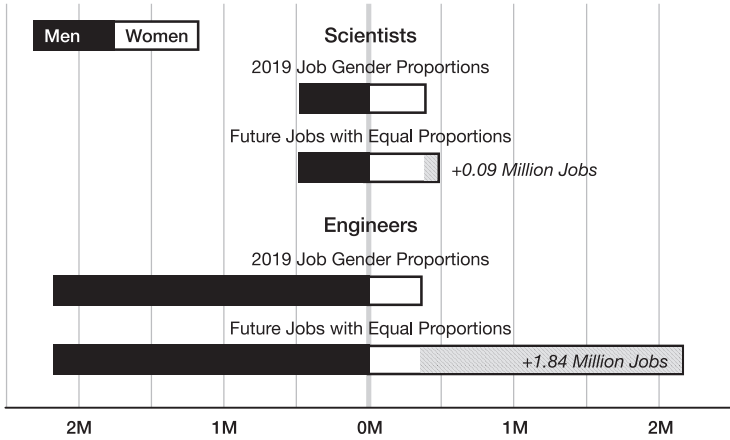
STATISTICALLY ACCURATE STEM PANEL



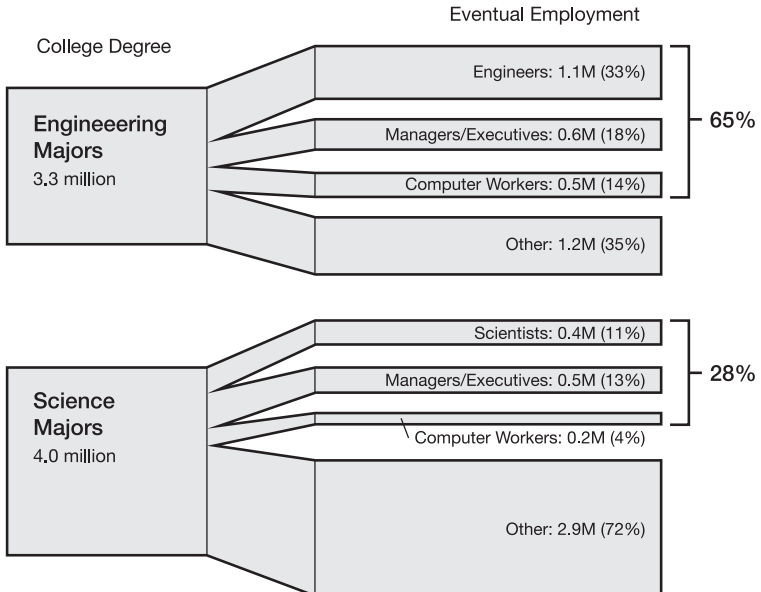
HOW TO PICK A STEM PANEL



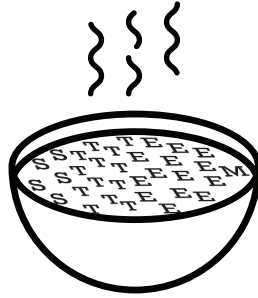
WHERE WE ARE VS. WHERE WE COULD BE



HOW ENGINEERING AND SCIENCE GRADUATES USE THEIR DEGREES



STEM ALPHABET SOUP



Chapter 3

WHAT ENGINEERING ACTUALLY IS

ENGINEERING IS EVERYWHERE

Here's a look at all of the engineering you might encounter in a single morning:

It's 6:00 a.m. Your **alarm clock** starts beeping, and you roll out of **bed**.



Electronics Engineering
Mechanical Engineering
Manufacturing Engineering



Mechanical Engineering
Manufacturing Engineering
Packaging Engineering

You take a shower with nice **hot water** and use your favorite **shampoo**.



Civil Engineering
Environmental Engineering
Mechanical Engineering
Chemical Engineering



Chemical Engineering
Manufacturing Engineering
Industrial Engineering

In the kitchen, you get milk from the **refrigerator** and **cereal** from the cabinet.



Mechanical Engineering
Chemical Engineering
Electrical Engineering



Agricultural Engineering
Manufacturing Engineering
Food Engineering
Bioengineering

While eating breakfast with a **spoon**, you scroll through your feed on your **smart phone**.



Manufacturing Engineering
Mining Engineering
Materials Engineering



Computer Engineering
Electronics Engineering
Mechanical Engineering
Software Engineering

You get dressed in your favorite **outfit** and jump in your **car**.



Manufacturing Engineering
Textile Engineering
Petroleum Engineering



Mechanical Engineering
Electrical Engineering
Petroleum Engineering
Systems Engineering

You turn on your **GPS** to check traffic and drive down the **streets** to head to work.



Aerospace Engineering
Electrical Engineering
Mechanical Engineering
Software Engineering
Systems Engineering



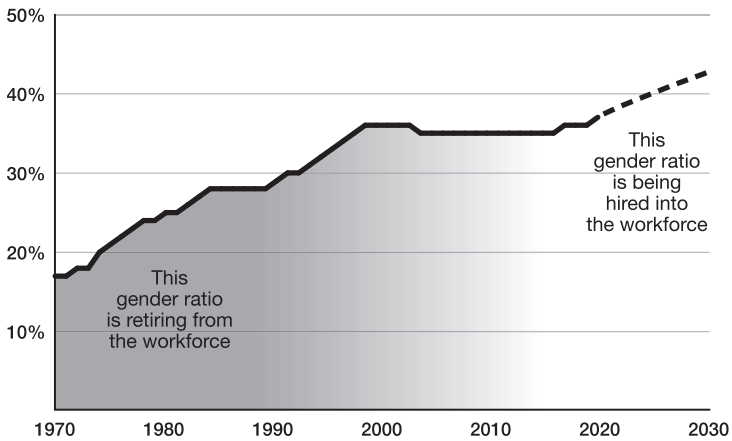
Civil Engineering
Industrial Engineering
Environmental Engineering

In the first hour of your day, you've encountered every major engineering discipline. The results of engineering are ubiquitous. They are so commonplace that we hardly even think about them anymore—but engineering is everywhere around you every day!

Chapter 4

THE CULTURE OF VICTIMHOOD

STEM GENDER RATIO IMPROVEMENT OVER TIME



Chapter 5

MONEY AND STABILITY

HIGHEST EARNING COLLEGE MAJORS

Rank	College Major	Median Wage (\$)
1	Petroleum Engineering	160,480
2	Pharmacy & Pharmaceutical Sciences	133,340
3	Metallurgical Engineering	115,640
4	Mining & Mineral Engineering	114,460
5	Chemical Engineering	113,280
6	Electrical Engineering	109,740
7	Aerospace Engineering	106,200
8	Mechanical Engineering	102,660
9	Computer Engineering	102,660
10	Geological & Geophysical Engineering	102,660
11	Computer Science	97,940
12	Civil Engineering	97,940
13	Applied Mathematics	97,940
14	Industrial & Manufacturing Engineering	95,580
15	Physics	95,580
16	General Engineering	95,580
17	Engineering Science, etc.	95,580
18	Architectural Engineering	94,400
19	Engineering & Industrial Management	92,040
20	Statistics & Decision Science	92,040
21	Management Info Systems & Statistics	90,860
22	Environmental Engineering	89,680
23	Miscellaneous Engineering	89,680
24	Economics	89,680
25	Business Economics	88,500
Bachelor's Degree Holder, all majors		71,980

Appendix A:

AMBASSADORS 101

TEMPLATE: How to Ask Companies for Volunteers



To: Jane.Doe@company.com

Subject: Opportunity for Community Outreach—Engaging Girls in STEM

Hi Jane,

My name is Julie Newman and I am working with the Engaging Girls in STEM program with the Los Angeles County Office of Education. We are looking for women in engineering to volunteer for our annual event on March 15th at the Los Angeles County Arboretum to speak with middle school and high school aged girls about their careers.

Would you be able to forward the information attached to engineers at Boeing that might be interested? I have attached a flyer* to give your employees an idea of the event and how they can sign up to get involved in inspiring girls to pursue engineering!

If you are not the appropriate person for this, please let me know who I should be reaching out to. We look forward to having Boeing involved in our event and greatly appreciate the support! I'm happy to answer any questions and provide more information as needed.

Sincerely,
Julie Newman
STEM Coordinator
(123)456-7890

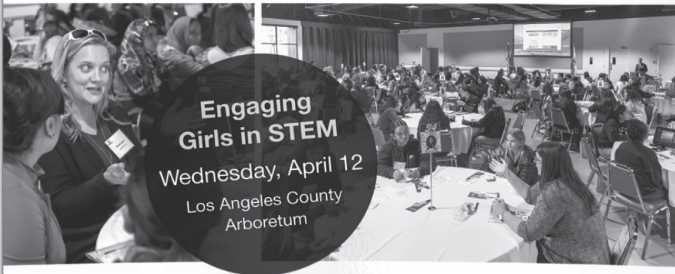
*This flyer can be from a previous year if you are asking in advance and don't have all of the details finalized yet for this year. Simply modify that sentence to "I have attached a flyer from last year's event to give..." Refer to the next section for more details on making a great flyer. Including a flyer is helpful, but not required. You can also refer them to your website if that would be more appropriate for your organization.

**EXAMPLE:
Flyer for Ambassador Recruitment**



The *Engaging Girls in STEM* program is looking for professionals like you for our upcoming event for middle school and high school girls!

Please join us as an Ambassador to speak directly with students about the interesting work that you do, how you got there, and all the great things about your job!



**Engaging
Girls in STEM**
Wednesday, April 12
Los Angeles County
Arboretum

Join us in our mission to help get more girls excited about careers in engineering!

Sign up here: www.EngagingGirlsInSTEM.com/2022/volunteer

EXAMPLE: LinkedIn Post for Ambassador Recruitment



Julie Newman

Project Manager || Electronics Engineer || STEM Advocate || Author

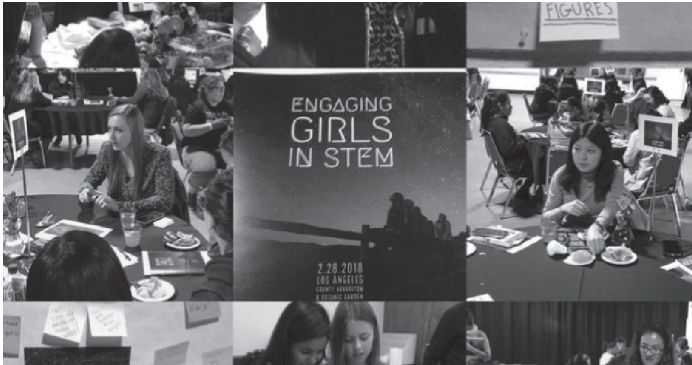


Calling all women in engineering! The Engaging Girls In STEM program is looking for professionals like you for our upcoming event for middle school and high school girls on April 12th.

Sign up to help get more girls excited about careers in engineering using the link below!

www.engaginggirlsinstem.com/2022/volunteer

#womenengineers #engineering #STEM #engineeringleadership



ENGAGING GIRLS IN STEM

engaginggirlsinstem.com

TEMPLATE:
How to Ask Past Ambassadors



To: Jane.Doe@company.com

Subject: Volunteer again with Engaging Girls in STEM?

Hi Jane,

We're getting ready to kick off this year's Engaging Girls in STEM Event and we're hoping that you'll join us again this year to get more girls excited about engineering!

When: March 15th, 2PM–5PM

Where: California Science Center (700 Exposition Park Dr, Los Angeles, CA 90037)

How to sign up: Reply to this email with your name, job title, and employer*

I hope you will volunteer with us again to help share your knowledge and enthusiasm with the girls this year! Please see the attached flyer for more details and let me know if you have any questions.

Sincerely,
Julie Newman
STEM Coordinator
(123)456-7890

*If you want to get fancy, you can also utilize a custom Google form to capture this information in one place as a table, rather than buried in your email. This is especially useful if you have a lot of volunteers (say more than 20). If you go this route, make it a survey that can be filled out in less than one minute. You will ask for more information later, don't worry. It's important to make it EASY to say "yes." Don't ask them to describe their job, tell you about what inspires them, or send you a photo of themselves. These things might mean they will see the email and decide to answer later—but then forget about it or lose it in their inbox.

**TEMPLATE:
Asking Individuals Directly**



To: Jane.Doe@company.com

Subject: Volunteer to inspire girls in engineering!

Hi Jane,

My name is Julie Newman and I am working with the Engaging Girls in STEM program with the Los Angeles County Office of Education. We are looking for women in engineering to volunteer for our annual event to speak with middle school and high school aged girls about their careers. We're hoping you'll join us this year to get girls excited about pursuing engineering!

When: March 15th, 2PM–5PM

Where: California Science Center (700 Exposition Park Dr, Los Angeles, CA 90037)

Time Commitment: 3 hours during the in-person event, less than 1 hour of preparation beforehand

How to sign up: Reply to this email with your name, job title, and employer.

We hope you will volunteer with us to share your knowledge and enthusiasm with the girls! I've included more information in the attached flyer* and I'm happy to answer any questions.

Sincerely,

Julie Newman

STEM Coordinator

(123)456-7890

*Again, the flyer is highly recommended, but not required. For one thing, people tend to notice emails with attachments more than others in their inbox. They stand out and are just a bit more interesting. Secondly, it can allow you to give them more information without the email being too long (and thus mildly intimidating to read).

TEMPLATE:
Asking Ambassadors for Content



To: Jane.Doe@company.com

Subject: Info Needed—Engaging Girls in STEM

Hi Jane,

Thank you so much for agreeing to volunteer at our event! We are putting together a program for the event and would like a few things from you for it. Please send these over by February 15th so that we have time to get the programs together and printed.

1. A headshot of you
2. A short bio (3 to 5 sentences)
3. Short answers (1 or 2 sentences) to the questions below:
 - a. What do you love most about your job?
 - b. How have mentors helped you in your career?
 - c. What are your hobbies?

Thanks again for your support. We look forward to seeing you at the event on <date>!

Sincerely,
Julie Newman
STEM Coordinator
(123)456-7890

*As mentioned above, you can also use a custom Google form to collect these pieces of information conveniently in one place, rather than in a pile of separate emails. This can be particularly useful if you have a lot of volunteers.

TEMPLATE:
Nudge Ambassadors for Responses



To: Jane.Doe@company.com

Subject: Response Needed by 2/22—Engaging Girls in STEM

Hi Jane,

The girls are looking forward to meeting you at our event on March 15th! We're putting together our program and would still like to get a few things from you, ideally before February 22nd if possible:

1. A headshot of you
2. A short bio (3 to 5 sentences)
3. Short 1-2 sentence answers* to the questions below:
 - a. What do you love most about your job?
 - b. How have mentors helped you in your career?
 - c. What are your hobbies?

Feel free to send us quick answers! Alternatively, if you send us your LinkedIn profile, we can also grab your profile photo and information from there.

Sincerely,

Julie Newman

STEM Coordinator

(123)456-7890

*Only ask for the extra content and questions if you plan to actually use them. A surprising number of engineers can be perfectionists with this sort of thing (and might take an hour to answer the above perfectly). If you don't get a response but the Ambassador volunteered the previous year, you can simply copy the responses you got before and use them again.

**TEMPLATE:
One-Week Warning**



To: Jane.Doe@company.com, Sally.Smith@company2.com,
Helen.Chen@company3.com...etc.

Subject: March 15th Event Details—Engaging Girls in STEM

Hello Ambassadors!

Our event is almost here! The girls can't wait to meet you next Wednesday!

Here are a few last-minute logistical details for the event:

Location: <Address of the event, and any instructions that might be needed to find the room>

Time: Please arrive by <15 min early time> so that we can have everyone ready by <event start time> when the girls arrive. The event will end at <event end time>.

Parking: <Give details about where to park and attach a diagram if possible>

What to bring: Feel free to bring any items or pictures that would help illustrate what you work on. We also recommend

bringing business cards or freebies from your company if you have them (the girls get really excited about these!).

I also wanted to let you know that we will be providing lunch/snacks* immediately after the event, so please stay and continue chatting with the girls if you are interested and able. If you have any questions about the event or will have any issues attending, please let me know as soon as possible.

Thank you again for volunteering with us and for helping more girls learn about engineering! Looking forward to seeing you all very soon.

Sincerely,
Julie Newman
STEM Coordinator
(123)456-7890

*Providing food is obviously not necessary, but it can be nice if your event is long or spans a meal time. Plus, baking in unstructured time when the Ambassadors can interact with the girls is an absolute win-win. So if you have the financial means to provide food, that can be an incredibly effective and slightly sneaky way of getting even more impact with your event. (Refer to Appendix B for information about securing corporate sponsorship to pay for things like catering at your events.)

**TEMPLATE:
Day-Before Reminder**



To: Jane.Doe@company.com, Sally.Smith@company2.com,
Helen.Chen@company3...etc.

Subject: STEM Event Reminder—Tomorrow @ <15 minutes
before event start time>*

Hello Ambassadors!

We look forward to seeing you tomorrow! Here are the key
details again for the event; please let us know if you have any
questions:

Location: <Address of the event, and any instructions that
might be needed to find the room>

Time: Please arrive by <15 minutes before event start
time> so that we can have everyone ready by <event start
time> when the girls arrive. The event will end at <event
end time>.

Parking: < Give details about where to park and attach a diagram if possible >

What to bring: Feel free to bring any items or pictures that will help you show the girls what you work on. We also recommend bringing business cards or freebies from your company if you have them (the girls get really excited about these!)

Sincerely,

Julie Newman

STEM Coordinator

(123)456-7890

*I recommend putting the time you want the Ambassadors to arrive in the subject line, just to drill in again that you want them there before the event starts. Traffic happens and this buffer time will mean that Ambassadors can still walk in “late” but before the girls are settled and the event has actually started.

**TEMPLATE:
Day-After Thank You**



To: Jane.Doe@company.com, Sally.Smith@company2.com,
Helen.Chen@company3...etc.

Subject: STEM Event— Thank you!

Hello Ambassadors!

Thank you so much for everything yesterday! The girls absolutely loved it and seem incredibly excited about everything they learned from you. I even overheard a conversation* between two girls after the event trying to decide if they would like mechanical engineering or electrical engineering more. Another girl told her teacher that she had no idea how cool civil engineering is (which she had never heard of before!) and that she wants to be “just like the woman who talked about leading the project to design a bridge that protected the river animals.”

I've attached a few pictures from the event and will be posting more soon to our website here: <link>

Again, we cannot thank you enough for taking time out of your day to speak with our girls. Each of you is such an

inspiration to them and now they understand so much more about possible future careers in engineering than we could have ever told them about without you. We hope you'll be able to join us again for this event next year. Thank you so much!

Sincerely,
Julie Newman
STEM Coordinator
(123)456-7890

*The key to a really, *really* good thank-you note is to be specific. Don't just say "thank you" and be done. Add some detail. Let them know an exact example of how they helped. This can be anything, a comment you got from a teacher at the event, something you observed with the girls afterwards, or a conversation you overheard between an Ambassador and a girl that stood out to you in some way. Pictures are a great way to make it feel impactful too, and I highly recommend you snap a few photos during the event to send to your Ambassadors as part of the thank you.

Appendix B:

OUTREACH EVENT TIPS

EVENT FORMAT RECOMMENDATIONS

by Audience Size and Event Duration

		EVENT DURATION			Speaker	Panel	Meet the Ambassadors	Activity
					Full-Day	Half-Day	1 hour	
AUDIENCE SIZE	Large (100+)	Full-Day	★★	★★	★			
		Half-Day	★		★		★★	
		1 hour	★★		★			
	Medium (50-75)	Full-Day	★		★★	★★		
		Half-Day			★		★★	
		1 hour	★		★★			
	Small (10-30)	Full-Day	★		★	★★	★★	★★
		Half-Day			★		★★	★★
		1 hour	★★		★		★	

EXAMPLE: Sample Event Schedules

Sample Event Schedule #1:

Event Info: One-hour after-school program for twenty 7th and 8th graders

5 minutes—Buffer time for girls to arrive and be seated

5 minutes—Introduce speaker

30 minutes—Speaker gives presentation

15 minutes—Speaker Q&A with audience

5 minutes—Thank the speaker and conclude event

Sample Event Schedule #2:

Event Info: Half-day morning program at weekend STEM club event with sixty 11th graders

5 minutes—Buffer time for girls to arrive and be seated

10 minutes—Introductory remarks by STEM Outreach Lead Coordinator

5 minutes—Transition and setup for panel

30 minutes—Panel discussion

10 minutes—Panel Q&A from the audience

5 minutes—Explanation of Meet-the-Ambassadors logistics by
STEM Outreach Coordinator

10 minutes—Break and setup for Meet-the-Ambassadors

15 minutes—Meet-the-Ambassadors Rotation #1

15 minutes—Meet-the-Ambassadors Rotation #2

15 minutes—Meet-the-Ambassadors Rotation #3

15 minutes—Meet-the-Ambassadors Rotation #4

30 minutes—Break

15 minutes—Meet-the-Ambassadors Rotation #5

15 minutes—Meet-the-Ambassadors Rotation #6

15 minutes—Meet-the-Ambassadors Rotation #7

15 minutes—Meet-the-Ambassadors Rotation #8

10 minutes—Closing remarks & thank you to Ambassadors

5 minutes—Instructions for lunch after the event (and
reminder that Ambassadors are invited!)

Sample Event Schedule #3:

Event Info: All-day summit event with 250 high-school girls from multiple districts

5 minutes—Buffer time for girls to arrive and be seated

10 minutes—Introductory remarks by STEM Outreach Lead Coordinator

5 minutes—Introduce speaker

45 minutes—Speaker gives presentation

15 minutes—Speaker Q&A with audience

5 minutes—Thank the speaker and explain logistics of Meet-the-Ambassadors

20 minutes—Break and setup for Meet-the-Ambassadors

15 minutes—Meet-the-Ambassadors Rotation #1

15 minutes—Meet-the-Ambassadors Rotation #2

15 minutes—Meet-the-Ambassadors Rotation #3

15 minutes—Meet-the-Ambassadors Rotation #4

15 minutes—Meet-the-Ambassadors Rotation #5

5 minutes—Instructions for lunch and reminder for girls to talk with Ambassadors during lunch!

60 minutes—Break for lunch

45 minutes—Panel discussion

15 minutes—Panel Q&A from the audience

5 minutes—Introduce second speaker

30 minutes—Speaker gives presentation

15 minutes—Speaker Q&A with audience

10 minutes—Closing remarks & thank you to Ambassadors, Panelists, & Speakers

**TABLE:
Say This, Not That**

Topic	GOOD	BAD
Event Purpose	We are here today to give you insight into engineering, which is a really great path that you may not know much about! We want to give you the information you need to consider engineering and see if it might be a good fit for you.	We are here today because there are still way more men than women in STEM. We want to inspire you to choose STEM to fix this problem and combat gender discrimination.
Attendees	In this room, we have so many bright and creative students. You are natural problem solvers and great communicators. You want to make a difference in the world and know that working together collaboratively is the best way to do that.	In this room we have a lot of girls who know they can be anything they want to be. None of you will let anyone tell you that you can't do something just because you are a girl. You know that girls are strong and better than boys at a lot of things.
Speaker	Our speaker is here to give you a detailed inside look into the awesome things she works on and why she loves what she does.	Our speaker is here today to tell you about the challenges she faced to reach where she is today and show you that whatever you set your mind to you can achieve even when other people want to put you down.
Panelists	We've brought in a panel of women in engineering to show you the wide variety within the engineering field to understand what a job in these areas can look like!	We've brought in a panel of role models to tell you what it's like to be a woman in STEM. They have each persevered through the difficulties of making it in the industry and are here to share advice for girls like you.

Topic	GOOD	BAD
Ambassadors	Our fantastic Ambassadors are here today to tell you all about their careers in engineering. They are here to talk with you about why they chose the paths they did, what projects they have worked on, what their day-to-day looks like, and what they enjoy most about their jobs.	Our fantastic Ambassadors are here today to prove to you that it is possible to succeed in STEM as a woman. They are here to talk about the challenges they have faced, what it's like to be a woman in STEM, and why it is important that you pursue a STEM field too.
Engineers	Engineers work creatively in teams to solve problems that help people.	Engineers use math and science every day to build stuff.
Career Choice	Planning for your future is a big decision and there are lots of different factors to consider. What does the day-to-day look like? Do you find the work meaningful? Are there good job prospects in that subject matter? How well do the jobs in that industry pay? Would the career path integrate well with the other things you want to do in your personal life? You are full of potential and could excel in many different career paths. We want to help you find the one that is best for you from every angle.	You should follow your passion. Choose a career that excites you. Do what you love. If you pick your favorite subject in school and choose that as your college major, you can't go wrong. If you love math class, study math. If you love biology class, study biology. Decide if you want to go into a more technical field, like chemistry or finance, or a more creative field, like art or music. If you want to help people, you should become a doctor or a nurse.
Present	There are a lot of opportunities in engineering.	There are not enough women in STEM.
Future	If you choose engineering, you can help a lot of people and help make the future a better place for all of us.	If you choose STEM, you can help break the glass ceiling and prove to the world that women belong anywhere they want to be.

TEMPLATE: Welcome Speech



Welcome to <Event>! My name is <blank> and on behalf of <Organization>, I want to say how excited we are to have all of you here with us! Today you'll get to learn what it is like to be an engineer. Engineering is a really great career path that you may not know much about yet. We have brought together a great team of Ambassadors, our professional women in engineering, to explain all of the cool things they work on and why they love their jobs! You will also get to hear from our featured speaker, <name>, who will give you an inside look into how she helps people by solving problems every day! Deciding what career path to follow is a big decision and we hope to give you a taste today of why you might want to consider pursuing engineering. There are a lot of great opportunities in engineering for bright, creative team players like you. If you want to make a difference in the world, it could be the perfect fit for you!

**TEMPLATE:
Asking Someone to Speak**



To: Jane.Doe@company.com

Subject: Speaking Opportunity—Engaging Girls in STEM

Hi Jane,

My name is Julie Newman* and I am working with the Engaging Girls in STEM program with the Los Angeles County Office of Education. Our program is focused on teaching girls about engineering and helping them interact with professional women in the field. We would like to invite you to be our featured speaker for our upcoming event! Please see the details below:

When: Saturday, March 15th, 1PM–4PM

Where: California Science Center (700 Exposition Park Dr, Los Angeles, CA 90037)

Audience: Approximately 100 high-school girls (9th through 12th grades)

Details: We would like you to speak for approximately 30 minutes, followed by 15 minutes of Q&A. We will have a

projector available if you would like to show slides or photos of your work!

Please let me know if you are interested and available to speak at our event! I'm happy to answer any questions and provide you with more details for planning. Looking forward to hearing from you!

Sincerely,
Julie Newman
STEM Coordinator
(123)456-7890

*Introducing yourself and explaining the program goals aren't needed if you know the person you are asking or if they have already served as an Ambassador or volunteer for you in the past. If you are asking them to speak based on a recommendation from someone they know, it is usually a good idea to mention that connection to lend more credibility to your request.

TEMPLATE: Sending the Speaker More Details



To: Jane.Doe@company.com

Subject: Speaking Details—Engaging Girls in STEM

Hi Jane,

Thank you, great to hear! We are very excited to have you as our featured speaker! Below is a list of the in-depth details about the event and a few questions about your preference for the event:

- 1. Recording:** We would like to record your presentation and post it to our website following the event.

→ Do we have your permission to record your presentation?*

- 2. Equipment:** The venue has a projector and hand-held microphone setup. There is a podium with a microphone stand and cables to connect a laptop. We will have a laptop and presentation clicker available for you to load your presentation onto if desired.

→ Let us know if you would prefer to use your own laptop or if you have any other equipment needs.

- 3. Venue:** The address for the California Science Center is: 700 Exposition Park Dr, Los Angeles, CA 90037. The event will take place at the auditorium on the first floor of the center, near the western edge of the building. Please see the attached annotated map for the best place to park and directions to the auditorium.
- 4. Schedule:** We will begin setup for the event at 12PM and recommend that you arrive at the venue no later than 12:45PM. The event will start at 1PM, beginning with a brief presentation from our organization which will flow directly into our introduction of you as the featured speaker, after which we'll hand the microphone to you. After your presentation, I will facilitate the Q&A and we will have a separate microphone for the audience members to use to ask questions. After the Q&A we will transition to a short break with refreshments and snacks in the lobby outside the auditorium. Next, the event will transition to our "Meet-the-Ambassadors" activity where we have the girls rotate in small groups between 10–15 tables with one professional woman in engineering at each. This will run until the end of the event around 4PM. You are more than welcome to stay for the duration of the event if you are

available and to participate in “Meet-the-Ambassadors” if you are interested! I’m sure the girls would love to get the opportunity to talk with you in a smaller conversation and to get your advice on how they can find a great career like you!

→ Please let us know if you are interested in staying after your presentation and participating in the “Meet-the-Ambassadors” portion of the event.

5. Audience: We will have approximately 120 high school aged girls from the Los Angeles school district in attendance. Each school was offered a limited number of invitations, so each of the girls in the audience was selected by their teachers to be invited to attend. We expect this to be a very engaged audience, and the girls are likely to have lots of questions for you!

6. Speaker Introduction: We plan to introduce you briefly prior to your presentation with a few details about you.

→ Please send us any materials you would like us to use for our introduction of you before your presentation.

7. Presentation: We are planning for your presentation to be approximately 30 minutes, followed by 15 minutes of Q&A. We encourage you to share lots of photos of your work and diagrams

to help the girls get a better picture of what you do. We have found that the presentations that are best received have primarily graphic elements and limited amounts of text in a large font size.

8. Topic Suggestions: The purpose of our event is to get girls excited about pursuing careers in engineering and help give them the information they need to determine if it would be a good fit for them! For this reason, we recommend you focus on the great things about your career and highlights so far. Girls also love hearing detailed stories about your projects, including how you worked on them as part of a team and what skills were required in that environment. Some of the most impactful themes include creativity, collaboration, and the ways in which your work helps people. Try to share with them the sense of fulfillment you've had in your career. I've also attached a handout along these lines that might help spark some ideas for your presentation.**

Again, I want to thank you for agreeing to be our featured speaker for this event. These events have a great impact on the girls in the audience and we know that your presentation will help many of them choose engineering!

Looking forward to getting your answers to the questions above and helping you prepare in any way that you need!

Sincerely,

Julie Newman

STEM Coordinator

(123)456-7890

*Whenever you are writing a longer email like this, it is crucial that you use good formatting to make it easier to read and respond to. With a format like this, each topic is clearly numbered, and each question is clearly identifiable. Don't bury questions within larger blocks of text if you need an answer to them. Using good formatting makes it much easier for your speaker to respond, and this is the way many engineers write their emails. You will more than likely get a response that either has in-line answers or an email with a corresponding numbered list of answers such as:

1. Yes, you can record
2. I will use my own laptop
3. Thanks for the map

4. Yes, I would love to stay for the second part of the event!

Etc...

**See the “Meet the Ambassadors” section of this appendix for an example Ambassador Talking Points Hand-out, which can also be very useful to speakers and panelists.

EXAMPLE: Sample Meet-the-Ambassadors Program

AMBASSADORS	
	NAME Job Title COMPANY
	BERNICE BROWN Civil Engineer BIG CORP
	DIANA DORIS Mechanical Engineer NEWMAN CONSULTING

AMBASSADORS	
	ALICE ALLEN Electrical Engineer ELECTRICALPLUS COMPANY
	CHRISTINE CHENG Chemical Engineer LLOYD INDUSTRIES
	EMMA ELLIOT Systems Engineer SPECIFIC DYNAMICS

TEMPLATE: Ambassador Talking Points Hand-out



ENGINEERING AMBASSADOR Talking-Points Handout



Event Purpose

- To get the girls excited about pursuing careers in engineering
- To help the girls understand what life as an engineer is like
- To give the girls the information they need to determine if engineering would be a good fit for them (and which type!)

Recommendations for What Resonates Most

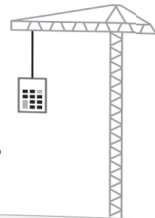
- Focus on the positives, talk about the highlights of your job.
- Tell stories and give specific examples whenever possible.
- Explain what your day-to-day looks like and how it varies.
- Talk about what you were like when you were their age.
- Discuss the soft skills needed to succeed as an engineer.
- Share with them what it feels like when you succeed at work.
- Tell them how your career fits in well with and enables your lifestyle, hobbies, and family activities.
- Don't be shy to talk about the perks of your career including salary, travel, vacation time, stability, and respect from others.
- Explain what your path to becoming an engineer was like and how much education was or was not required.

Themes to Focus On

- Creativity
- Collaboration
- Helping People
- Money
- Stability
- Fulfillment
- Fast Track to Job
- Work-Life Balance

Basic Questions to Answer

- What do you work on?
- How is your work environment?
- What do you like most about your job?
- How did you pick your college major?
- How did you pick your career path?
- Why are you glad you chose engineering?
- What advice would you give to your younger self?



TEMPLATE: Asking for Panelists



To: Jane.Doe@company.com

Subject: Panelist Opportunity—Engaging Girls in STEM

Hi Jane,

My name is Julie Newman and I am working with the Engaging Girls in STEM program with the Los Angeles County Office of Education. Our program is focused on teaching girls about engineering and helping them interact with professional women in the field. We would like to invite you to be one of our featured panelists for our upcoming event! Please see the details below:

When: Tuesday, January 22nd, 11AM–12PM*

Where: Event will be virtual, held over Zoom

Audience: Approximately 50 middle-school girls (6th through 8th grades)

Details: The panel will consist of four women in engineering and will be facilitated by a moderator. The panel will run for

about 1 hour total (45 minutes of questions from the moderator, followed by 15 minutes of Q&A from the audience). We will have a quick planning meeting over Zoom in the coming weeks to introduce the four of you to each other and to go over questions with the moderator in advance.

Please let me know if you are interested and available to join as a panelist at our event! I'm happy to answer any questions and provide you with more details for planning. Looking forward to hearing from you!

Sincerely,
Julie Newman
STEM Coordinator
(123)456-7890

*An advantage of virtual events is that Ambassadors can much more easily attend during the hours of a typical workday. Committing to an in-person event may require them to take a day off work or to block off multiple hours on their calendar. By contrast, volunteering for an event like this one might only require them to add a one-hour meeting to their calendar in-between regular work activities.

**TABLE:
Ask This, Not That**

Topic	GOOD	BAD
Stories	Can you tell us an interesting story about a project you worked on?	What types of projects do you work on?
Communication	How important are good communication skills in your workplace?	How do you deal with men talking over you in meetings and “mansplaining” at work?
Teams	How does it feel to work in such a collaborative environment?	How often are you the only woman in the room during meetings at work?
Job	What is the best part about your job?	What is the worst part about your job?
Challenges	Tell us about a time you overcame a challenge at work.	Tell us about a time you experienced failure at work.
Motivation	What motivates you to work in your field? What impact does your work have on the world?	What gives you the strength to persevere in such a male-dominated field?
College	Many people say that being an engineering student is actually more challenging than being a professional engineer. Do you agree with this sentiment, and can you tell us a bit about the differences? Are you glad that you are where you are now?	Everyone knows that there is a lot of really hard math involved in getting any STEM degree. What else made getting your college degree difficult? Did you ever fail any classes or have to change majors?

Topic	GOOD	BAD
Growing Up	What were some of your interests growing up? Did any of them help start you on the path to engineering?	Most girls aren't interested in STEM. As a child, how were you different while growing up as compared to the other girls around you?
Mentors	Tell us how mentorship, both formal and informal, has impacted your career for the better.	Mentorship is crucial to career advancement. How have you dealt with the lack of women available to be mentors?
Role Models	Who do you look up to at work? Do you have any role models?	Who are your women-in-STEM role models?

EXAMPLE: 50 Great Questions for Panelists

THEME	QUESTION
Creativity	When was a time you had to develop a creative solution to solve a problem?
Creativity	Creativity is often primarily associated with artistic fields. How important is creativity to engineering?
Collaboration	Engineering is very collaborative. Tell me about a time when you really enjoyed working with your coworkers.
Collaboration	How much of your time is generally spent working alone vs. working with teammates?
Communication	Are good communication skills important for being successful as an engineer? If yes, how so?
Communication	Can you tell me about a time that good communication was important at work?
Helping People	How have you had a chance to see the impact of your work on helping people in the world?
Helping People	Can you tell us about how the work you do helps people?
Helping People	How does your job make a difference in the world?
Helping People	Can you tell me about a time you brought a new perspective to a project that made a big difference?
Helping People	What positive impact does the work you do have on the community?
Education	How did you decide on your college major?
Education	Have you learned a lot from your job since graduating from college? Can you give us a few examples?
Education	Are advanced degrees considered a requirement in your field? Do many engineers in your area have PhDs?
Education	Has your company helped pay for you to get an advanced degree or take any special training?

THEME	QUESTION
Education	How many years did you spend in college before starting your career? Were you happy to get out into the workforce once you finished your education?
Personal	Tell us about your life outside of work! How do you spend your free time?
Personal	What are your top priorities in life outside of work? How does your job fit into your lifestyle?
Career	How was your job search and how did you find your current role?
Career	When you started at your first job, how did the team welcome you and help you succeed?
Career	What qualities do the best leaders in engineering have? How can these skills best be developed?
Career	Are there multiple paths within your company that you can take to advance?
Career	What is a work milestone you are really proud to have achieved?
Career	Tell us about an award you received at work and the work you were being recognized for!
Career	What does a day in your life as an engineer look like?
Career	What do you like most about your job?
Career	Tell me a story about the most interesting day you've had in your career so far.
Career	Have you had the opportunity to travel as part of your job? If so, where did you go and what were you working on?
Career	What is something you are looking forward to at work in the near future?
Career	How much autonomy do you have in your work life? Have you found that managers give you a lot of independence?

THEME	QUESTION
Growing Up	Imagine you are talking to your younger self. What reassuring advice would you give about your future?
Growing Up	What types of activities did you do or interests did you have when you were younger that helped you decide engineering was right for you?
Growing Up	How old were you when you learned what engineering was? Do you wish you had known more sooner?
Growing Up	When you were growing up, did you work on any interesting projects? How do the skills you learned there translate to your job today?
Fulfillment	What do you find most fulfilling about your career?
Fulfillment	How does it feel when you accomplish a big goal at work?
Lifestyle	Can you explain more about the lifestyle associated with your career? How much time do you spend at work and what are you doing day-to-day?
Lifestyle	Do you have friends at work? Have you done any fun social activities with your coworkers?
Money	Engineering careers have higher average salaries than most other fields. Can you tell us about how this has made your life easier than if you had pursued a different path?
Money	Would you say that student loans are worthwhile for those who study engineering? How hard has it been to pay off that debt compared to your friends who studied other subjects?
Stability	Do you feel like the positions you have held provide the stability you are looking for in a career?
Stability	Does your work environment have a lot of people with families and children? How does that affect the culture of your workplace?
Engineering	What do you wish people knew more about regarding engineering?

THEME	QUESTION
Engineering	As an engineer, you can work in almost any industry. What are some of the things you like about the industry that you picked?
Engineering	How does your job as an engineer differ from that of a scientist?
Engineering	Besides what you work on, what types of things do other engineers in your field work on?
Engineering	What do few people realize about engineering?
Advice	What advice do you have for girls in the audience who are interested in pursuing engineering?
Advice	What are some activities or resources you would suggest for girls in the audience who are interested in pursuing engineering?
Advice	What would you recommend the girls in the audience do if they are interested in following a path similar to yours?

PANEL QUESTION TABLE

CalState LA MESA STEM Day, October 9th

Instructions to Panelists:

1. Please fill out the column below your name with one of the following responses for each question:

- Y = Very excited to answer!
- = Ambivalent, might want to answer if others will
- N = Not interested in answering

2. At the bottom of the table, add a question of your own that will be directed specifically to you so you can tell a good story!

Question	Justene	Kia	Jomya
1. Can you please introduce yourself and tell us a bit about what you do?	Y	Y	Y
2. What do you like most about your job?	N	N	-
3. What is a work milestone that you achieved that you are really proud of?	N	-	-
4. How did you decide on your college major?	Y	Y	Y
5. What do you wish people knew more about engineering?	-	Y	Y
6. As an engineer, you can work in almost any industry. What are some of the things you like about the industry you picked?	-	-	Y
7. Imagine you are talking to your younger self. What reassuring advice would you give to yourself about your future?	Y	-	N
8. How does your job make a difference in the world?	-	-	Y
9. Engineering is very collaborative. Tell me about a time where you really enjoyed working with your coworkers.	-	Y	Y
10. How did you get your job?	-	-	-
11. What types of activities did you do or interests did you have when you were younger that helped you decide that STEM was right for you?	Y	-	-
12. Justene's question: Studying engineering makes finding a job much easier. How did you approach the challenge of switching college majors?	Y	-	-
13. Kia's question: Can you tell us about a time you had the opportunity to travel internationally as part of your job?	-	Y	-
14. Jomya's question: How have you had a chance to see the impact of your work on helping people in the world?	-	-	Y

**TEMPLATE:
Corporate Sponsorship Request**



To: Jane.Doe@company.com

Subject: Support Community Outreach—Engaging Girls in STEM

Hi Jane,

My name is Julie Newman and I am working with the Engaging Girls in STEM program with the Los Angeles County Office of Education. We are an organization focused on outreach in the community to help inspire middle school and high school aged girls to pursue careers in engineering. Our event last year was held at the California Science Center where we brought together more than three hundred girls from the surrounding school district and more than thirty professional women in engineering—three of whom were from <Company>!* Our next event is planned for <date>.

We understand that <Company> has a history of supporting community outreach and we are hoping that you will consider supporting our organization as well!

Will <Company> support our upcoming event at one of the following sponsorship levels?

STEM Diversity Leaders (\$10k+)

STEM Diversity Champions (\$5k+)

STEM Diversity Supporters (\$1k+)

In return for sponsoring our event, <Company> would be listed in our program at the corresponding level and featured in all public media coverage for the event. In addition, we would be happy to reserve additional space for more women and leaders from <Company> to participate in the event and serve as featured speakers. Note that if you would prefer to support our event through some other means (such as offering a venue, providing company-branded items, or covering catering for the event) we will also consider those towards the sponsorship levels above.

If you are not the appropriate contact for this, please let me know whom I should contact. We look forward to having <Company> take on a larger role in supporting our event for the upcoming year! I'm happy to answer any questions and provide more information as needed.

Sincerely,

Julie Newman

STEM Coordinator

(123)456-7890

*If you have had or are going to have Ambassadors from the company you are asking, make sure to highlight that fact! You could even consider including the names of those employees so that the person you are asking can reach out to them internally and, with near certainty, get the social proof they are looking for that your event is worth sponsoring.

Appendix C:

OUTREACH & ENGINEERING FAQs

List of Famous Engineering Products and Systems

CATEGORY	ENGINEERING PRODUCT/SYSTEM
Consumer Devices	Smart Phones Laptops Smart Watches Security Cameras Refrigerators Virtual Reality Headsets
Medical Technology	MRI Machines Robotic-Assisted Surgery Implantable Insulin Pumps Contact Lenses Pharmaceuticals
Connecting the World	The Internet Satellite Communications Cellphone Networks Transatlantic Cable WiFi Container Shipping Transcontinental Railway Commercial Air Travel Telephones GPS Satellites

CATEGORY	ENGINEERING PRODUCT/SYSTEM
Construction Marvels	Hoover Dam
	Burj Khalifa
	Millau Viaduct
	Panama Canal
	Golden Gate Bridge
	Channel Tunnel
Vehicles	Cars
	Airplanes
	Helicopters
	Trains
	Cruise Ships
	Fighter Jets
Exploration	International Space Station
	Space Shuttle
	Mars Rovers
	Rockets
	Deep Sea Submarines
	Large Hadron Collider
	James Webb Space Telescope
Infrastructure	Electrical Grid
	Highway System
	Water Treatment Facilities
	Recycling & Waste Management
	High-yield Agriculture
Power	Nuclear Power Plants
	Wind Turbines
	Solar Panels
	Electric Vehicles
	Deep Sea Oil Platforms

List of Famous Engineers

Name	Engineering Field	Known For
Gwynne Shotwell	Mechanical Engineer	COO, SpaceX (Featured in Chapter 5!)
Frances Arnold	Chemical Engineer	Professor & Nobel Laureate, Caltech (Featured in Chapter 6!)
Marilyn Jorgenson Reece	Civil Engineer	Trailblazer, California Department of Transportation (Featured in Chapter 7!)
Donna Shirley	Aerospace Engineer	Manager, Mars Exploration Program, NASA Jet Propulsion Laboratory (Featured in Chapter 8!)
Sylvia Acevedo	Industrial Engineer	CEO, Girl Scouts of the USA
Isamu Akasaki	Electrical Engineer	Nobel Laureate, Inventor of the blue LED
Buzz Aldrin	Mechanical Engineer	Astronaut, NASA
Neil Armstrong	Aeronautical Engineer	Astronaut, NASA
John Bardeen	Electrical Engineer	Two-time Nobel Laureate, Co-inventor of the Transistor
Mary Barra	Electrical Engineer	CEO, General Motors
Ayah Bdeir	Computer Engineer	Founder, littleBits
Alexander Graham Bell	Engineer & Inventor	Co-Founder, AT&T
Jeff Bezos	Electrical Engineer	Founder, Amazon & Blue Origin
Amar Bose	Electrical & Sound Engineer	Founder, Bose Corporation
Wernher von Braun	Aerospace Engineer	Director of Marshall Space Flight Center, NASA

Name	Engineering Field	Known For
Kimberly Bryant	Electrical Engineer	Founder, Black Girls Code
Ettore Bugatti	Automotive Engineer	Founder, Bugatti Automobiles
Ursula Burns	Mechanical Engineer	CEO, Xerox
Winnie Byanyima	Aeronautical Engineer	Ugandan Politician & Diplomat
Edith Clarke	Electrical Engineer	Trailblazer, General Electric
Tim Cook	Industrial Engineer	CEO, Apple Inc.
Rudolf Diesel	Mechanical Engineer	Inventor of the Diesel Engine
Bonnie J. Dunbar	Aerospace Engineer	Astronaut, NASA
Elsie Eaves	Civil Engineer	Editor, McGraw-Hill's Engineering News-Record
Martin Eberhard	Electrical Engineer	Co-Founder, Tesla
Thomas Edison	Electrical Engineer	Inventor, Edison Electric Light Company
Gustave Eiffel	Civil Engineer	Designer of the Eiffel Tower
Henry Ford	Engineer	Founder, Ford Motor Company
Henry Gantt	Mechanical Engineer	Project Management Pioneer, Hoover Dam
Lillian Moller Gilbreth	Industrial Engineer	Founder, Gilbreth, Inc.
Helen Greiner	Mechanical Engineer	Co-Founder, iRobot
George H. Heilmeyer	Electrical Engineer	Pioneer of Liquid Crystal Displays (LCDs), CTO, Texas Instruments
Robert A. Heinlein	Aeronautical Engineer	Science Fiction Author
Beatrice Alice Hicks	Chemical & Electrical Engineer	Founder & President, Society of Women Engineers

Name	Engineering Field	Known For
Howard Hughes	Engineer	Business Magnate, Pilot, Film Director, Philanthropist, & Founder of Hughes Aircraft Company
Grant Imahara	Electrical Engineer	TV Personality, Robotcist
Lonnie Johnson	Aerospace Engineer	Inventor, Super Soaker & Nerf Gun
Charles K. Kao	Electrical Engineer	Nobel Laureate, Fiber Optics
Scott Kelly	Engineer	Astronaut, NASA
Charles F. Kettering	Electrical Engineer	Founder, Delco
Jack Kilby	Electrical Engineer	Nobel Laureate, Texas Instruments
David Koch	Chemical Engineer	Vice President, Koch Industries
Gene Kranz	Aerospace Engineer	Chief Flight Director, Apollo 11, NASA
Hedy Lamarr	Inventor & Film Actress	Significant Contributor to Communications Technologies
Elsie MacGill	Aeronautical & Electrical Engineer	WW2 Aircraft Designer
Guglielmo Marconi	Electrical Engineer	Inventor of Radio
Gordon Moore	Engineer & Chemist	Co-Founder, Intel Corporation
Elon Musk	Engineer	Founder, CEO, & Chief Engineer, SpaceX; Co-founder, Tesla
Satya Nadella	Electrical Engineer	CEO, Microsoft
Dava Newman	Aerospace Engineer	Deputy Administrator, NASA
Robert Noyce	Engineer & Physicist	Co-founder, Fairchild Semiconductor and Intel Corporation

Name	Engineering Field	Known For
Bill Nye	Mechanical Engineer	Science Communicator & TV Personality, CEO of The Planetary Society
Nicolaus Otto	Engineer	Inventor of Internal Combustion Engine
Larry Page	Computer Engineer	Co-founder, Google and Alphabet Inc.
Chamath Palihapitiya	Electrical Engineer	Venture Capitalist, CEO, Social Capital
Julie Payette	Electrical, Computer, & Systems Engineer	Politician & Astronaut, Canadian Space Agency
Hattie Scott Peterson	Civil Engineer	US Army Corps of Engineering
Henry Petroski	Civil Engineer	Author
Sundar Pichai	Materials Engineer	CEO, Google and Alphabet Inc.
Ferdinand Porsche	Automotive Engineer	Founder, Porsche Automobiles
Judith Resnik	Biomedical & Electrical Engineer	Astronaut, NASA
Emily Warren Roebling	Civil Engineer	Major Contributor to the Brooklyn Bridge
Ginni Rometty	Systems Engineer	CEO, IBM
Harold Rosen	Electrical Engineer	"Father of the Geostationary Satellite & Communications Satellite"
Claude Shannon	Electrical Engineer	"Father of Information Theory"
George Stephenson	Civil & Mechanical Engineer	"Father of Railways"
Katharine Stinson	Aeronautical Engineer	Federal Aviation Administration
Joseph Strauss	Structural Engineer	Chief Engineer, Golden Gate Bridge

Name	Engineering Field	Known For
Lisa Su	Electrical Engineer	CEO, Advanced Micro Devices (AMD)
Nikola Tesla	Electrical & Mechanical Engineer	Futurist & Inventor
Andrew Viterbi	Electrical Engineer	Co-Founder, Qualcomm Inc.
James Watt	Mechanical Engineer	Inventor of the Steam Engine
Stephanie Wilson	Aerospace Engineer	Astronaut, NASA
Steve Wozniak	Electronics Engineer	Co-Founder, Apple Inc.
Ren Zhengfei	Engineer	Founder, Huawei Technologies