Next Engineers: Greenville Engineering Academy Paper Application

About Next Engineers: Greenville Engineering Academy

Are you curious about the world and how it works? Do you want to make the world better by solving the problems around us? Then the Next Engineers: Engineering Academy might be for you!

What *is* an engineer? The answer may surprise you. Yes, engineers design and build cars and bridges, airplanes and batteries. But they do so much more! Engineers ask questions and solve real problems – in healthcare, in the environment, and in just about any field you can think of! Engineers love adapting and improving things. They are good at visualizing new possibilities and coming up with creative solutions.

We want **you** to become an engineer! In fact, if you graduate from the Next Engineers: Greenville Engineering Academy, complete the Free Application for Federal Student Aid (FAFSA), and enroll in an engineering degree program at an institution of higher education, you will receive a $20,000 scholarship in support of your studies.

The world needs more diverse engineers to help build a world that works. If you are African American, Latinx, and/or Native American, and/or a young woman, we strongly encourage you to apply to the Engineering Academy! Read the details below to learn more.

Overview and Schedule

The Engineering Academy is a 3-year program that can help you become an engineer through design challenges and skill-building workshops. Engineering Academy sessions take place outside of school hours (such as Saturdays) at Clemson University. If you need help with transportation, it can be provided on a case-by-case basis.

The Engineering Academy schedule for Year 1 is included in the end of this document. More details will be sent to students selected for the Engineering Academy.

Selection Process

Engineers come from various backgrounds and have many interests. This application is an opportunity for you to share more about yourself and how the Engineering Academy would be a good fit for you.

We are looking for students who:

1. Plan to graduate high school in May or June 2025;
2. Live in Anderson, Greenville, Oconee, Pickens, or Spartanburg counties;
3. Demonstrate *academic aptitude* by meeting minimum grade requirements in math(s) and science, listed below:
    - Received a final grade of at least a B in Algebra I*
    - Received a final grade of at least a B in their 9th grade science class*
4. Demonstrate *academic commitment* by pledging to take courses related to engineering through the end of secondary school (e.g., mathematics, physics, chemistry, earth science);

5. Demonstrate *qualities needed to succeed as an engineer*, including:
    - Persistence (dedication to schoolwork, commitment to fulfilling responsibilities, and/or commitment to bettering oneself or community);
    - Evidence of interest in engineering and/or participating in the Engineering Academy; and
    - A developing engineering mindset.

**You should receive final grades in June for courses taken in 2021-2022. If you submit this application prior to receiving your final grades, we will request final grades from you during the application review process. If your grade is slightly below the minimum, but your reference indicates you are academically prepared, you may be deemed to meet this requirement.*

If you meet the criteria above, based on our application review, you will be placed into a final selection pool. From there, applicants will be randomly selected into the Engineering Academy. We will notify you of your selection status by **September 29, 2022**.

Application Process

The application is due by **Thursday, September 15, 2022**. You may apply online or you may apply by paper using the application below.

In order to complete the application, you will need the materials listed below. Submission instructions are provided in the application.

- An electronic copy of your **transcript** or grade report
- An electronic **reference form,** also included below (optional, but highly encouraged)
- Two short **written or video responses**

If you have any questions or need assistance with the application, e-mail nextengineersGVL@clemson.edu. Thank you!

About You

*indicates required answer

First Name:* Last Name:*

Age:*

Street Address:*

City:* State:* Zip Code:*

Do you live in Anderson, Greenville, Oconee, Pickens, or Spartanburg counties?* ☐ Yes ☐ No

Phone Number:*

☐ Cell/Mobile ☐ Landline E-mail Address:*

What is your gender identity? (Check all that apply.)*

- ☐ Agender
- ☐ Female
- ☐ Gender Fluid
- ☐ Genderqueer
- ☐ Male
- ☐ Transgender
- ☐ Prefer not to say
- ☐ Gender not listed. (Please describe):

How do you describe your race and/or ethnicity? (Check all that apply.)*

- ☐ American Indian or Alaska Native
- ☐ Asian
- ☐ Black or African American
- ☐ Hispanic, Latino/a/x, or Spanish
- ☐ Native Hawaiian or Pacific Islander
- ☐ White
- ☐ Prefer not to say
- ☐ Race not listed. (Please describe):

How did you hear about Next Engineers: Greenville Engineering Academy? (Check all that apply.)

- ☐ Attended a presentation in community
- ☐ Attended a presentation in school
- ☐ Other:
- ☐ Teacher / School Representative
- ☐ Instagram
- ☐ Twitter
- ☐ Friend
- ☐ Parent

Did you (or will you) attend Next Engineers: Greenville Engineering Camp in August 2022? ☐ Yes ☐ No

Your Education & Extracurricular Activities

*indicates required answer

Do you plan to graduate high school in May or June 2025? ☐ Yes ☐ No

Name of School*:

Have you taken Algebra I?* ☐ Yes ☐ No

If "Yes," what was your final grade in Algebra I?*

What mathematics class(es) did you take in school year 2021-2022?*

What was your final grade(s) for the class(es) last year?

What mathematics class(es) will you take in school year 2022-2023?*

What science class(es) did you take in school year 2021-2022?*

What was your final grade(s) for the class(es) last year?

What science class(es) will you take in school year 2022-2023?*

Do you agree to take mathematics classes (that apply to engineering) each year through senior year?*

☐ Yes ☐ No

If "No," please explain below:

Do you agree to take physical science classes, such as chemistry, physics, earth sciences, etc., each year through senior year?*

☐ Yes ☐ No

If "No," please explain below:

Briefly tell us how you spend time outside of school classes. Do you participate in sports, clubs, summer camps, or organizations associated with school or the community? Do you work or have responsibilities for your family? Share here:*

The following materials must be submitted by the application deadline for your application to be complete. You may attach these documents to this application before submitting it.

1. We want to know how you are doing in school, especially in math and science classes, so please **attach to the application a copy of your transcript or grade report**. An unofficial transcript or grade report is acceptable. If you need help getting your transcript or grade report, please see your guidance counselor. If you are submitting this application prior to getting your final grades from the 2021-2022 school year, we will ask you to submit final grades for us when we are reviewing your application.

2. We want to know if an adult in your life thinks you will be a good fit for the Engineering Academy. **Find an adult to serve as your reference for the program and ask them to complete the Reference Form at the bottom of this application and submit the completed form with the application.** Here are some ideas of adults who could serve as a reference for you: teacher, school counselor, mentor, coach, employer, or another adult who can tell us more about you. Your family members may **not** serve as your reference. *Submitting a reference form is optional for the completion of your application, but we highly encourage you to submit the form as it will help us get to know you better.*

Student-Response Questions

*indicates required answer

We want to know more about your interests, thoughts, and plans. As part of the application, we invite you to respond to two prompts. The first prompt is required. For the second prompt, you have 3 options and must choose 1. Both prompts are opportunities for you to share more about yourself with us. There are no wrong answers.

You may submit a written response, or you may submit a video of yourself responding to the prompts. You can decide on the response format that fits you best. You may write and upload your responses and attach them to this application OR you may record video responses and write the links according to the directions below.

Prompt 1. You must respond to this prompt: What excites you most about engineering or the Engineering Academy, and why? What do you hope to gain from your participation in the program?
Response should be 1-2 pages if written or 2-3 minutes if recorded.

Prompt 2. Choose one of three options below for a response. Response should be 1-2 pages if written or 2-3 minutes if recorded.

Option 1: Engineers often learn through failure. They 'fail forward' and see it as an opportunity to improve. Describe a problem you tried to solve in the past. Talk about the following things in your response:

- What was the problem?
- Why was it an important problem to try and solve?
- How did you solve/try to solve the problem?
- What failures or setbacks did you face and how did you deal with these?

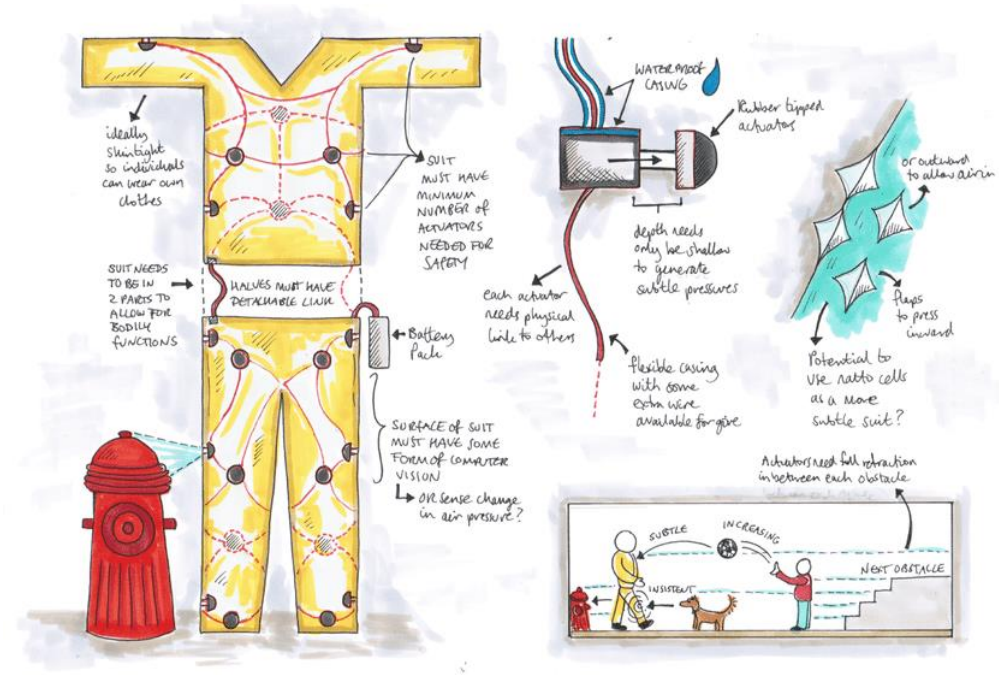
Option 2: Engineers try to solve real-world problems with practical solutions that use math and science. Tell us about a problem in your community that you would like to help solve as an engineer. Talk about the following things in your response:

- What is the problem?
- Why do you think this is an important problem to solve?
- How would you try to solve this problem? What possible engineering solutions would you try?

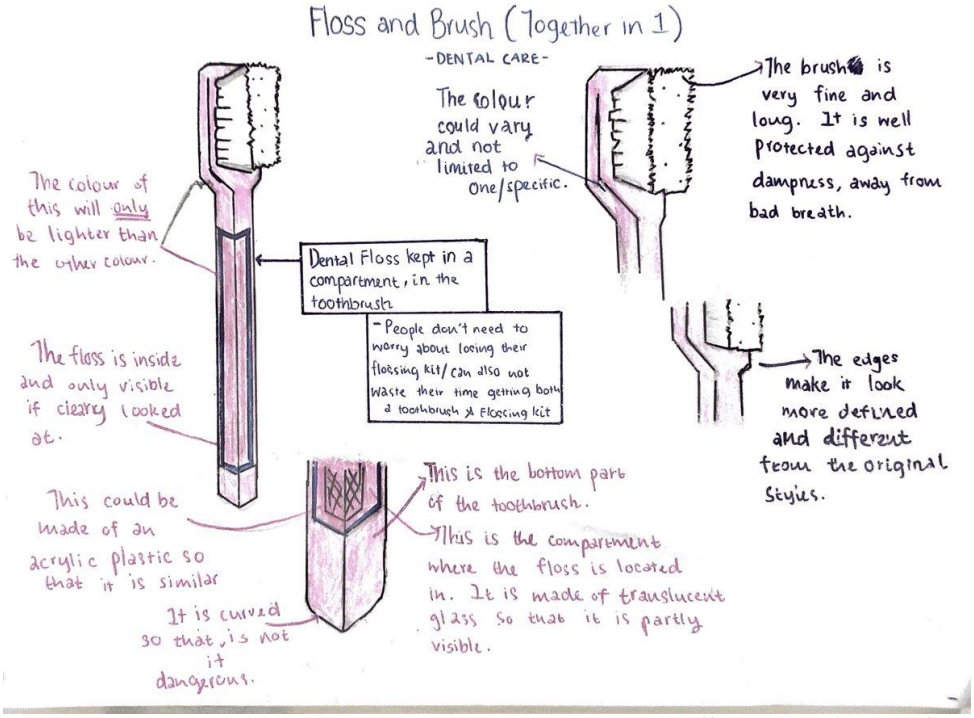
Option 3: Whether you need to take food to school, on a day trip or a picnic, having a container to carry it in can be a great help. Your task is to design the perfect lunchbox. Your lunchbox must be easy to carry and must have space for food and drink for at least one person. Here are some questions to get you thinking:

- What shape should your lunchbox be?
- How big should it be?
- How strong and/or light should it be?
- Will it keep your food and drink hot or cold? If so, how?

Tell us about your design for the perfect lunchbox by submitting one or more annotated sketches. An annotated sketch is a drawing of your design where you also describe and explain what it is, how it will work, and what it will be made of using labels and short blocks of text (see the example below). Be sure to also explain what shape you chose and why and what makes your lunchbox different from other lunchboxes you have seen before? If you like, you can record a video of yourself presenting your design and annotated sketch(s) or maybe even a prototype of your design.



An annotated sketch of a wearable safety suit for the blind by Miriam Sturdee (https://www.researchgate.net/figure/Annotated-sketch-and-ideation-around-theme-of-wearable-safety-suits-for-the-blind_fig20_323993556)



An annotated sketch for a 2-in-1 brush and floss toothbrush by Mr G (https://twitter.com/mrcg_dt/status/1323069412589514757)

Steps to submit a video response:

1. Make sure you set up the correct permissions so that the application reviewers can access your videos.
2. Then, share a link to the video in the application so the Next Engineers team can view it.
3. Upload your video to a free video hosting site, such as **YouTube** or **Vimeo**, or upload your file to a free file storage site, such as **Google Drive** or **Dropbox**.

Are you submitting response(s) via video? ☐ Yes ☐ No If yes, share your links here:

Prompt #1:

Prompt #2:

Application Tips

- Submit all documentation requested including the high school transcript, response to the two prompts, and completed reference form. (Completed reference form is optional, but highly encouraged).
- Properly review the instructions for both prompts. Ensure that you answer the entire prompt by responding to all parts of that question and meet the length specification.
- If you decided to submit a video, it is important to check that the video is complete. Check that the video did not end abruptly while you were talking. While the video must show you speaking, and must have clear video and sound, the production value of the video will not be considered in the review.
- When recording your video remember to choose a quiet location that is free from distractions and loud background noise.

Applicant Participation Commitment*

*indicates required answer

Students who do not attend at least 80% of Engineering Academy sessions per year and complete necessary work may not be able to complete the program. Please **thoroughly** review the Academy schedule for the 2022-23 year below, check the box, and sign below to indicate your commitment to the Engineering Academy if you are selected to participate.

Greenville Academy Schedule 2022-2023. In-Person sessions run 9 AM to 3 PM at Clemson University*		
October 2, 8, and 29	January 7, 21, and Virtual session week of Jan 30	April 22
November 5 and Virtual session week of Nov 14	February 11 and 25	May 6, 20, and Virtual session week of May 22
December 3	March 11 and Virtual session week of March 27	June 3

*Please note, this schedule is subject to change due to inclement weather or other unforeseeable circumstances. Updates will be shared with Academy students and parents or guardians. Engineering Academy is a 3-year program. Schedules for subsequent years will be similar and shared with Academy participants and parents or guardians. The schedule can also be viewed at **https://www.nextengineers.org/cities/greenville.**

☐ If selected, I will participate in the Next Engineers: Greenville Engineering Academy, sponsored by GE Foundation and managed by FHI 360 and Clemson University. I am committed to participating in all Engineering Academy activities (at least 80 hours/year) for the duration of three years. If I cannot attend an activity, I will notify the Engineering Academy staff immediately, and I will make up work missed during my absence.

Applicant Signature: _____

Parent/Guardian Section

*indicates required answer

Parent / Guardian Name:*

Address (if different from applicant's above):*

City: State: Zip Code:

Phone Number:* E-mail Address:*

Commitment*: Students who do not attend at least 80% of Engineering Academy sessions per year and complete necessary work may not be able to complete the program. Please **thoroughly** review the Academy schedule below, check the box, and sign below to indicate support of your child's participation in the Engineering Academy.

Greenville Academy Schedule 2022-2023. In-Person sessions run 9 AM to 3 PM at Clemson University*		
October 2, 8, and 29	January 7, 21, and Virtual session week of Jan 30	April 22
November 5 and Virtual session week of Nov 14	February 11 and 25	May 6, 20, and Virtual session week of May 22
December 3	March 11 and Virtual session week of March 27	June 3

*Please note, this schedule is subject to change due to inclement weather or other unforeseeable circumstances. Updates will be shared with Academy students and parents or guardians. Engineering Academy is a 3-year program. Schedules for subsequent years will be similar and shared with Academy participants and parents or guardians. The schedule can also be viewed at **https://www.nextengineers.org/cities/greenville.**

☐ If selected, my child will participate in the Next Engineers: Greenville Engineering Academy, sponsored by GE Foundation and managed by FHI 360 and Clemson University. I am committed to supporting my child's participation in all Engineering Academy activities (at least 80 hours/year) for the duration of three years. If my child cannot attend an activity, my child will notify the Engineering Academy staff immediately, and my child will make up work missed during the absence.*

Parent Signature:* _____

Research Study*: As part of the Next Engineers program, we are conducting a research study to identify how the Engineering Academy may help students learn about engineering and gain new skills. All students applying to the program are potentially eligible to participate in the study, which will include a yearly survey, an interview, and a focus group discussion. More information about the research study is included below. Once you review the document, please indicate below if we may contact you regarding your child's possible participation in the Engineering Academy research study. Your response will not affect your child's eligibility for the Engineering Academy.

☐ Yes, I agree to being contacted about my child possibly participating in the research study.

☐ No, I don't agree to being contacted about my child possibly participating in the research study.

Application Submission

The application and supplemental materials must be received by **September 15, 2022.** You may submit the application and materials via e-mail to nextengineersGVL@clemson.edu or you may mail them to the following address:

Brittany Sanders
Next Engineers Greenville Project Manager, PEER & WISE
College of Engineering, Computing, and Applied Sciences
Clemson University
158 Freeman Hall
Clemson, SC 29634

Next Engineers: Greenville Engineering Academy Student Reference Form

About the Engineering Academy and Reference Form

Over three years, Engineering Academy students (ages 15 – 18) learn to think and act like engineers and prepare to advance to post-secondary education through the Academy. With over 80 hours per year outside of school, the Academy includes a series of immersive design challenges, career coaching, and college-readiness workshops to equip diverse groups of youth with the skills they need to build an engineering identity and career. To learn more about Next Engineers and the Engineering Academy, visit www.nextengineers.org.

To support their application to the Engineering Academy, a student has identified you as someone who can provide greater insight into their abilities and qualities. Please complete the Reference Form on page 2 and include any additional comments that can provide the review committee with relevant information about the student.

The completed reference form should be returned to the applicant before the application deadline, which can be viewed at https://www.nextengineers.org/cities/greenville.

Eligibility Criteria & Selection Process

Our goal is to admit a wide range of applicants who can succeed in a college or university engineering program. Below are the eligibility criteria that applicants must meet to be considered for selection. The applicant must:

1. Plan to graduate high school in May or June 2025;
2. Live in Anderson, Greenville, Oconee, Pickens, or Spartanburg counties;
3. Demonstrate *academic aptitude*[1] by meeting minimum grade requirements in math(s) and science, listed below:
    - Received a final grade of at least a B in Algebra I
    - Received a final grade of at least a B in their 9th grade science class
4. Demonstrate *academic commitment* by pledging to take courses related to engineering through the end of secondary school (e.g., mathematics, physics, chemistry, earth science);
5. Demonstrate *qualities needed to succeed as an engineer*, including:
    - Persistence (dedication to schoolwork, commitment to fulfilling responsibilities, and/or commitment to bettering oneself or community);
    - Evidence of interest in engineering and/or participating in the Engineering Academy; and
    - A developing engineering mindset.

Successful applicants will be identified by random selection of eligible participants. Final selection into Engineering Academy will not be based on gender, ethnicity, or race.

[1] If the applicant's grade is slightly below the minimum, as determined by Community Partner, but their reference indicates they are academically prepared, the applicant may be deemed to meet this requirement.

Reference for Applicant (write name):

Reference Name:

Reference Phone: Reference E-mail:

Your relationship to applicant: ☐ Teacher ☐ School Counselor ☐ Coach or mentor ☐ Other. Please explain:

Provide a brief description of how you know the applicant:

On a scale of one (1) to five (5), with one being the lowest, please rate the student on the following characteristics. Please provide a *brief* example or explanation of your rating in the comment box. If you are not able to provide a rating, please mark 'not applicable' (N/A).

Characteristic	Rating (1-5)	Comment
Dedication to schoolwork		
Commitment to fulfilling responsibilities		
Commitment to bettering oneself or the community		
Academic aptitude for higher level mathematics and science courses		
Interest in Science, Technology, Engineering, and Mathematics (STEM)-related fields and/or activities		

Based on the program description and core eligibility criteria listed above, as well as your knowledge of the student, why do you think this student is a good candidate for the Engineering Academy? (Please explain in 1 paragraph.)

The completed form should be returned to the applicant before the application deadline, which can be viewed at **https://www.nextengineers.org/cities/greenville. Thank you!**

Next Engineers: Engineering Academy Description of Research Study

Introduction: As part of the Next Engineers program, FHI 360 will be conducting a research study to learn about how the Next Engineers: Engineering Academy supports development in engineering. Since your child is applying to the Next Engineers program, FHI 360 is seeking your permission for your child to participate in this study. We want to make sure you understand what this study includes so you can decide if you want them to participate.

Study description: We are conducting this research study so we can identify better ways to help students learn about engineering and gain new skills. Research activities included in this study will be conducted annually and involve a student survey, a student interview, and a student focus group. Student participants will be asked about their experiences with the Next Engineers program or experience with similar classes at school. Students will also be asked about their progress through school and to share updated academic information such as what courses they are enrolled in. The survey will take around 40 minutes to complete, and interviews and focus groups will last one hour.
We are inviting all students who apply to the Next Engineers program to participate in this research. Your child's participation in these activities is completely voluntary. There are no negative consequences for your child's selection for, or participation in, the Next Engineers program if your child does not participate in the research activities. Your child may choose not to participate in all, some, or none of these research activities. Your child can also decide not to answer specific questions and/or stop participating in the research at any time. Your child does not have to provide a reason for not answering questions or for deciding to stop participating.

Compensation: As noted previously, there will be no compensation for your participation in the survey, interview or focus group if they are selected into the Next Engineers program. Students who are not selected into the program but do choose to participate in the research will be offered a small stipend for providing their time. Again, selection into the Next Engineers program will not depend on your or your child's participation in the research study.

Participant Selection: This research is being done across multiple cities where there are Next Engineers programs. Once all student applications are submitted and reviewed, all eligible students will then be given an equal chance of being admitted into the Academy. This, unfortunately, means that some students may not be admitted to the Academy due to the limited number of available seats. Students admitted to the Next Engineers: Engineering Academy, approximately 50 students per year in each city where the program is happening, will be asked to participate in the annual survey. Another 50 to 150 students not enrolled in the Next Engineers program will also be asked to participate in the same survey. Approximately 24 students per year will be asked to participate in interviews, and 20 will be asked to participate in focus group discussions.

Next Engineers Greenville

Engineering Academy Schedule, Cohort 2, October 2022 – June 2023

All **in-person** Academy sessions will run from 9 a.m. to 3 p.m. at Clemson University on the dates below.*

OCTOBER

Virtual Orientation: Oct 2

Design Challenge 1: Oct 8 and 29

NOVEMBER

Design Challenge 1: Nov 5

Virtual Career & College Readiness:

Week of Nov 14

DECEMBER

College & Career Readiness: Dec 3

JANUARY

Design Challenge 2: Jan 7 and 21

Virtual Career & College Readiness:

Week of Jan 30

FEBRUARY

Design Challenge 2: Feb 11 and 25

MARCH

College & Career Readiness : Mar 11

Virtual Career & College Readiness:

Week of Mar 27

APRIL

Design Challenge 3: Apr 22

MAY

Design Challenge 3: May 6 and 20

Virtual Career & College Readiness:

Week of May 22

JUNE

College & Career Readiness: Jun 3

The Engineering Academy is a 3-year program. More information will be provided to students selected for the Academy prior to the start of the program. Students who do not attend at least 80% of Engineering Academy sessions per year and complete necessary work may not be able to complete the program. Schedules for subsequent years will be similar and shared with Academy participants.

**Please note, this schedule is subject to change due to inclement weather or other unforeseeable circumstances. Updates will be shared with Academy students and parents or guardians.*

GE Foundation

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