

NC State SHPE Chapter
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Raleigh, NC 27607
December 20, 2018

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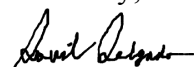
The Society of Hispanic Professional Engineers (SHPE) at NC State firmly believes in both enhancing the education of Hispanic students and positively influencing them to become tomorrow's science and technology leaders. For this reason, the NC State SHPE Chapter is pleased to submit a proposal for a SHPE Jr. Chapter at Millbrook High School (MHS), which entails an NC State campus visitation on April 5, 2018. The campus visit would expose students to college and an academic support network while in high school in order to strengthen access, recruitment and retention of these students in STEM fields. We believe that this is a rewarding and exciting opportunity to offer any group of pre-college students who are interested in pursuing careers in STEM, especially since the total cost of the visit per student is not projected to exceed \$20.00. This cost would be funded by the NC State SHPE Chapter as well as sponsorships from the university.

The campus visit will consist of a student shadowing activity, which provides MHS students with mentorship to see that they have a more direct path to a STEM education. Recruitment will be strengthened by directly preparing students for college applications through an information session and tour of Centennial Campus and Hunt Library that provides insight into the resources available for a successful undergraduate career at NC State. Lastly, a college student panel will contribute to retention efforts by engaging students in an academic support network that promotes success in college by building study and time management skills, communication skills, and instilling a desire to use support services beyond high school.

More broadly, the SHPE Jr. program consists of four hands-on STEM activities, two mentoring activities and a larger-scale get out and STEM activity. Although the curriculum as a whole is important to achieving the objectives of SHPE Jr., the only event that will be discussed in detail within this proposal is the one "get out and STEM" activity. The other two components of the program will be addressed in other documents sent to the MHS SHPE Jr. advisor, Vanessa Kadlac. Registration documents for the campus visit will also be sent to the advisor.

We look forward to serving as a source of support to encourage MHS students to attend college and pursue degrees in STEM. We hope that MHS joins us in our goal to increase the presence of Hispanics enrolled in STEM fields. If you have any questions, please contact David Delgado at ddelgad2@ncsu.edu or (919) 931-6783. We look forward to hearing from you soon.

Sincerely,



David Delgado



**SOCIETY OF HISPANIC PROFESSIONAL
ENGINEERS (SHPE) JR. CHAPTER AT
MILLBROOK HIGH SCHOOL (MHS)**

NC STATE CAMPUS DAY VISIT

DAVID DELGADO

DECEMBER 20, 2018

SHPE JR. CHAPTER AT MHS:
NC STATE CAMPUS DAY VISIT

Prepared for:


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Executive summary

The purpose of this document is present an outline for the implementation of a SHPE Jr. Chapter at Millbrook High School (MHS) during the Spring 2019 semester. NC State SHPE is confident that the implementation of a SHPE Jr. Chapter at MHS will augment the success of students by providing scholarships, mentors, tutors and exposure to college life to overcome persistent educational barriers and encourage students to pursue STEM fields. The projected costs of the program's activities for an entire academic year total to approximately \$30.00 per student, none of which would be incurred by MHS or student/parent participants.

SHPE carries out its programs through donations from private organizations and support from the Women and Minority Engineering Program (WMEP) at NC State. The major role of SHPE is to enhance the education of Hispanic students and positively influence them to become tomorrow's science and technology leaders. As an undergraduate student organization, SHPE's mission is to "change lives by empowering the Hispanic community to realize its fullest potential and to impact the world through STEM awareness, access, support and development."

Today, the NC State SHPE Chapter is proposing a new formal level of membership - SHPE Jr. High School Chapters (hereafter referred to as SHPE Jr.). The ultimate goal of SHPE Jr. is to increase the presence of Hispanics studying STEM. This proposal will describe the curriculum of the program at a high level, including four hands-on STEM activities, two mentoring activities and a visit to NC State's campus for a full day of STEM exposure. The latter will be the focus of the proposal as a campus visit encompasses the overarching goals of SHPE Jr. to strengthen the access, recruitment and retention of minority students in STEM.

The campus visit will consist of a student shadowing activity that will allow students to see first-hand what life as a minority engineering student entails. Students will also gain insight into the resources available for a successful undergraduate career at NC State University through an information session and tour of Centennial Campus and Hunt Library. Lastly, a college student panel and hands-on STEM activity will give students the opportunity to maximize the knowledge and confidence they gain in their capabilities to achieve a higher education. In order to execute a successful event, the following tasks will need to be completed leading up to the campus visit:

- Ensure student and faculty leaders accept the responsibilities of a SHPE Jr. Chapter.
- Advertise the campus visit at a STEM night and register the largest number of students.
- Develop a budget for the event given a final list of MHS student participants.
- Secure funding, volunteers, materials and room reservations for the campus visit through the use of SHPE's student, faculty and professional networks.
- Finalize the schedule of the campus visit and share it with MHS and volunteers.
- Review final concerns regarding the visit with volunteers, students and advisors.
- Collect student feedback from the visit in order to improve the event for future semesters.

The campus visit exemplifies precisely how SHPE Jr. would offer a meaningful way for undergraduate STEM students to give back to their community in being role models for the youth. To that extent, SHPE recognizes that community organization-based programs are among the most significant tools to influence the interest and capabilities of students in maximizing the educational benefits that academic institutions provide. The result is a program that has the potential to improve retention rates at both the high school and college level.

1.0 Introduction

The diversification of individuals within STEM careers can contribute new insights, viewpoints, and interpretations that aid the advancement of those fields in various ways. This is a fact that is understood by high school teachers, undergraduate institutions and industries alike. However, historical data indicates that minority students have consistently lower rates of enrollment and degree attainment in postsecondary STEM education. Therefore, increasing minority access, recruitment and retention within higher education should be a goal along the entire STEM pipeline. The development of a SHPE Jr. Chapter at Millbrook High School would synthesize the missions of the Wake County Public School system and SHPE in delivering a meaningful and engaging education to students that prepares them for successful careers in STEM.

The purpose of this proposal is to present an outline of the SHPE Jr. Program at Millbrook High School for the Spring 2019 semester. This proposal will describe the curriculum of the program at a high level, including four hands-on STEM activities, two mentoring activities and a visit to NC State's campus for a full day of STEM exposure. The latter will be the focus of the proposal as it presents the objectives of the activity, a detailed budget and funding options, advertising and registration, a schedule of the visit, the program's leadership and their responsibilities, and supporting resources and documentation for the execution of the campus visit so that Millbrook High School can decide if they would like to implement a SHPE Jr. Chapter.

2.0 Need

There is ample evidence to suggest that there is an underrepresentation of minority students in STEM. Not just at the local level, but also as a nation there is a need for the public education system, higher education institutions and industry leaders to promote the diversification of individuals within STEM careers. This is a need that cannot be addressed one-dimensionally. Instead, it must be addressed by improving access, recruitment and retention of minority students in STEM career paths.

2.1 Access

According to the 2010 Census (2011), Hispanics numbered over 50.5 million representing 16.3 percent of the overall U.S. population. The Pew Hispanic Center (2017) indicated that from 1980 – 2016, the Hispanic population grew from 14.6 million to 58 million and projects a growth to 60.4 million by 2020, making it the principal driver of U.S. demographic growth since 2000. Yet, the growth of the Latino population is not echoed representatively throughout the educational pathway. In fact, it is an undisputed fact that Hispanics, as well as other minority groups, are not participating in STEM fields in numbers commensurable with their representation in our society.

2.2 Recruitment

The most recent data from the U.S. Department of Education (2016) indicates that only 23 percent of Hispanic adults age 25 and older have an associate's degree or higher and only 12 percent have an advanced degree, such as a master's or doctorate. Thus, there is a growing need to support more Hispanic students in completing high school and pursuing postsecondary education. Specifically, there is a need to increase the number of minority students who major in STEM fields. According to the 2017-2018 College of Engineering (COE) Annual Report (2018), the NC State COE enrolled 665 (9.9 percent of total enrollment) minority students in fall 2017.

Although this is a substantial increase over previous years, the fact of the matter is that more work still needs to be done in preparing students for an education in STEM. Fall 2017 minority enrollment included 242 African Americans, 317 Hispanic students, 14 Native Americans and 92 minority students of more than one race. Clearly, there is an opportunity to recruit more minority high school students into STEM fields whether it is at NC State or any other undergraduate institution.

2.3 Retention

Although there have been improvements in terms of access, equality in the attainment of four-year college degrees remains elusive for low-income and first-generation students. Many Hispanic high school students transitioning into four-year higher education institutions are part of this cohort. The fact is that baccalaureate degree attainment rate among young people from low-income families increased from 6 percent in 1970 to 12 percent in 2005; however, the rate among high-income youth increased from 40 percent to 73 percent (Mortenson, 2007). Some of the gaps in attendance and completion patterns reflect the fact that low-income, first-generation students tend to enter college with less academic preparation than their peers. Furthermore, these students are less likely to be engaged in the academic and social experiences that foster success in college (Engle, 2008). As a result, they tend to have lower levels of performance and persistence in postsecondary education.

3.0 Objectives

The overarching goal of SHPE Jr. is to increase the presence of Hispanics enrolled in STEM fields of study in higher education. SHPE Jr. intends to expose high school students to the broadest of STEM career opportunities and perpetuate interest in education by serving as the backbone in academic excellence. Hence, a solution that addresses the aforementioned problems related to access, recruitment and retention in postsecondary STEM education needs to meet the following objectives:

- Spark curiosity in STEM-related fields;
- Expose students to college to prepare them to pursue undergraduate studies;
- Mitigate the Hispanic high school drop-out rate and increase enrollment in postsecondary education;
- Mentor students in order for them to develop confidence in their leadership and academic abilities;
- Build a support network that fosters success beyond high school;
- Solution must be financially sustainable in order to be repeated over each academic year.

4.0 Solution

Prior research regarding minorities in STEM fields indicates that the factors of peer support and participation in STEM-related activities contributes positively to minority students' recruitment and retention in these fields. Hence, SHPE Jr. is an opportunity to strengthen the access, recruitment and retention of minority students in STEM at Millbrook High School. The following proposed solution is based on an estimate of 30 MHS student participants.

4.1 Curriculum at A Glance

4.1.1 4 Hands-On STEM Activities

Activities are in the following four categories: Science, technology, engineering, and mathematics (STEM). These would take place during the college-student led STEM nights throughout the two academic semesters. A sample STEM activity with the materials and equipment that would be provided by NC State' SHPE chapter is found in Appendix C.

Estimated Budget per Activity: \$50

Projected Time frame: Monthly

4.1.2 2 MentorSHPE Activities

Activities include practice in ACT/SAT, career path development, guidance in how to apply for college, how to find financial aid/scholarships, time management, etc. Parents are encouraged to attend these sessions in order to receive valuable information regarding their students' college education.

Estimated Budget: \$40

Projected Time frame: Bimonthly

4.1.3 1 Get Out and STEM Activity

Activities include Pre-College Symposium held at SHPE's National Conference, Regional Conference, competing in National Science Bowls, robotics competitions, etc. However, for the purpose of the first year of SHPE Jr. at MHS, this would consist of a visit to NC State's campus for a full day of STEM exposure. The main goal of this event is to maximize the knowledge and confidence that students gain in their capabilities to achieve a higher education in STEM.

Estimated Budget: \$500 - \$5,000

Projected Time frame: Early November, early March, or early April



Figure 1. Project 4-2-1 is the curriculum used by SHPE Jr. to expose students to the most knowledge surrounding a career path in STEM. The focus of this proposal is the one “Get Out and STEM Activity,” which is intended to be a visit to NC State’s Campus.

4.2 Get Out and STEM Activity

The purpose of the NC State campus visit is to emphasize all objectives of the SHPE Jr. Program in one event in targeting the improvement of access, recruitment and retention of minority high school students in STEM.

4.2.1 Access

The campus visit exposes students who have not considered a college education an option before to the transformative nature of a college education. A full day of STEM exposure that includes an information session, tour, college student panel, a STEM activity and lunch at a student dining hall makes for an engaging experience that students are sure to remember. Furthermore, it is an opportunity to address the questions, concerns and sensibilities of students in regards to pursuing a STEM higher education.

4.2.2 Recruitment

The campus visit allows students to see first-hand what life as a minority engineering student entails and gain insight into the opportunities available for a successful undergraduate career at NC State University. Students also receive mentorship in order for them to develop confidence in their leadership and academic abilities. The college student panel will address topics from study and time management skills to paying for a college education.

4.2.3 Retention

Research shows that first-generation Hispanic students are less likely to be engaged in activities that foster success in college such as studying in groups, interacting with faculty and other students, participating in extracurricular activities, and using support services. In being part of SHPE Jr., high school students learn that these support services exist in order to ease the difficulty of navigating the bureaucratic aspects of academic life. Thus, the campus visit highlights the importance of SHPE Jr. as part of a support network that carries on into one's college career. In this way, SHPE Jr. allows Hispanic college students in STEM to give back to their community in a meaningful way and in turn enrich their college experience.

4.3 Funding

In addition to getting high school students excited about the program, it will be the responsibility of the NC State SHPE chapter to secure funding for these activities – funding that will have to be approved by the chapter's advisor, Angelitha Daniel.

4.3.1 WMEP

Being the most reliable source of funding for the NC State campus visit, the WMEP program at NC State requires strict documentation and authorization in order to approve this visit. Serving as both the director of the program and the SHPE advisor at NC State, Ms. Angie would be the one to approve this funding.

4.3.2 SHPE Jr. Grant

The SHPE Jr. Grant is a \$500 grant that is awarded to SHPE Chapters that successfully lead an event with at least 50 participants (participants include parents and students). The award is contingent upon an application process and a follow-up report of the event, which consists of receipts, pictures and surveys. See Appendix A for supporting documentation that will need to be provided by MHS in order to establish a SHPE Jr. Chapter.

4.3.3 NC State SHPE Chapter

It is also an option to utilize the on-campus account for the funding of the STEM activity. NC State SHPE has an account built on member dues and external donors. The chapter would also be

able to utilize on-campus resources such as rooms, transportation, and STEM kits in order to execute the campus visit. Volunteers would also be secured from with the chapter's membership.

4.3.4 SHPE Jr. Chapter Dues

The last option is to encourage the SHPE Jr. Chapter members to collect dues internally in order to fund local chapter activities. However, the chapter dues are not to exceed \$20 a year for members. The SHPE Foundation Office does not require national dues in order to be recognized as an official SHPE Jr. Chapter. The SHPE Jr. Chapter would be required to submit information on dues collected in this case. This funding option is a last resort and will not be implemented unless the chapter activity being funded exceeds a cost of \$500 per student.

4.4 Budget Assessment

As an NC State student organization, certain expenses for the campus visit are covered by the University, including transportation within the campus, room reservations and a personal information session on the College of Engineering (COE) at NC State. Still, it will be important to develop an approximate expense report in order to secure the necessary funding for the event. The budget presented in the "Costs" section is based on 30 students participating in the campus visit. In summary, the anticipated cost of the event per student is approximately \$19.20.

4.5 Advertising and Registration

In order to increase the reach and impact of the SHPE Jr. Program's events, it will be necessary for SHPE Jr. leadership to adequately promote events such as the NC State campus visit. Likewise, NC State students will advertise the campus visit by providing the SHPE Jr. leadership with flyers as well as attending MHS at least once in January to directly encourage students to attend. A second meeting will occur in February to collect registrations and liability forms.

In order to secure a spot for the campus visit, students must register by filling out the SHPE Jr. membership form in Appendix A. Furthermore, interested students must read and sign the liability release form in Appendix B. The SHPE Jr. advisor at MHS is expected to collect these forms and deliver them to the NC State SHPE President.

4.6 Schedule

Based on the number of students actually registered, room locations will vary. However, the tentative schedule of events is accurate, as similar programs have been implemented in that past by the National Society of Black Engineers (NSBE) and WMEP through their Overnight Recruitment Weekend. Both high school and undergraduate students have consistently called these programs a success. A summary of the campus visit schedule can be found in Table 1, along with a map of the campus to aid with the visit in Figure 2 and Figure 3. Below is a detailed outline of the campus visit on Friday, April 5, 2018.

4.6.6 Hands-On STEM Activity

A guest NC State lecturer will join us at 2:15 PM to conduct a hands-on STEM activity to wrap up the day. Students will get the chance to make delicious ice cream using liquid nitrogen, half and half and other ingredients.

4.6.7 Depart from NC State

Ms. Angie and NC State SHPE President will deliver closing remarks and thank MHS students and advisor for visiting. Feedback surveys will be sent out shortly after so students can suggest improvements to the event for future semesters. Students should depart to MHS at 3:30 PM.

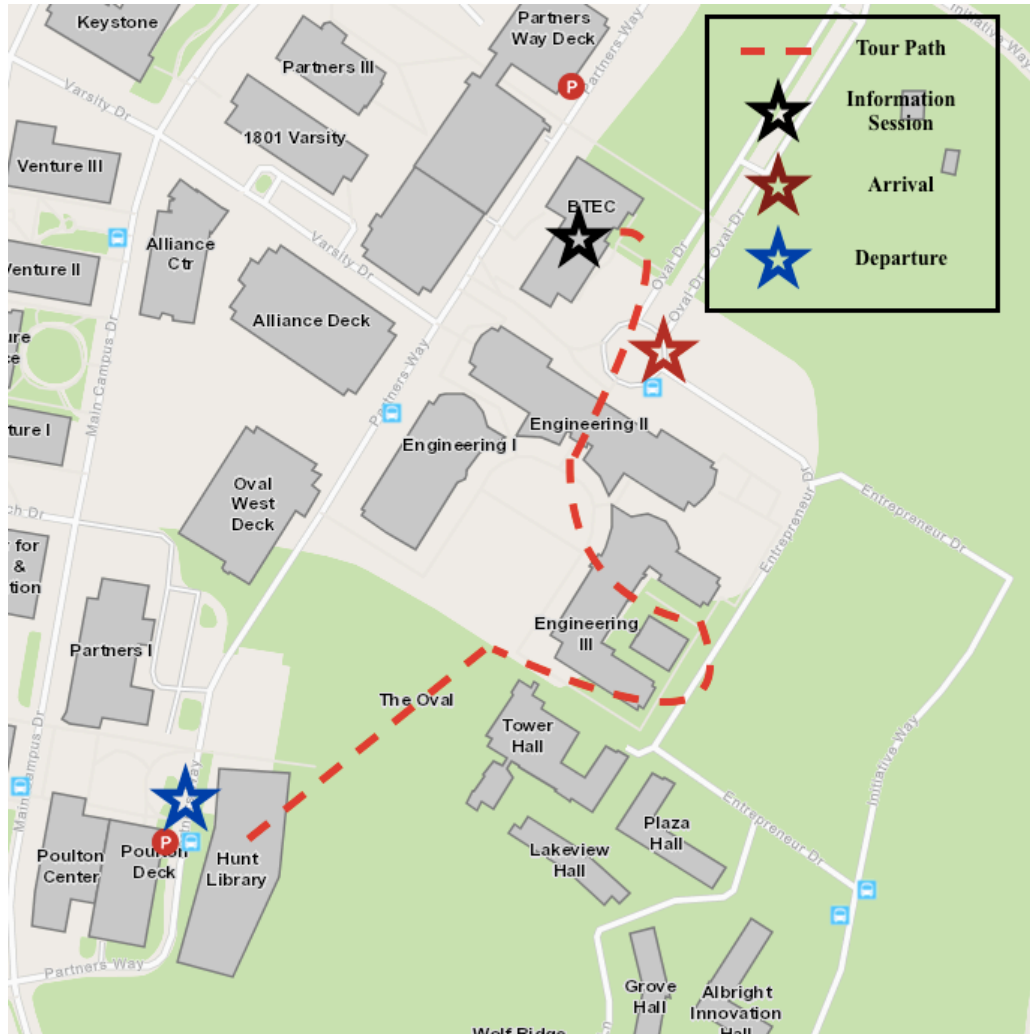


Figure 3. Map of Centennial Campus information session and tour (Image courtesy of <https://maps.ncsu.edu/>)

Table 1. Schedule of NC State Campus Visit with Millbrook High School

SHPE Jr. NC State Campus Visitation Day Agenda			
Time	Lead	Location (Tentative)	Event
8:00 AM	High School Advisor and April	Talley Student Union	High school students arrive/undergraduate students pick up students that will be shadowing them
8:30 AM	Student hosts	Main Campus	Student shadowing (classes, meetings, etc.)
11:00 AM	High School Advisor	Fountain Dining Hall	Lunch and commute to Centennial Campus
12:30 PM	Engineering Ambassadors	BTEC	NC State COE Information Session
1:00 PM	Engineering Ambassadors	Centennial Campus	Tour of Centennial Campus and Hunt Library
1:45 PM	Ms. Angie	Daniels Hall	WMEP college student panel discussion
2:15 PM	Guest lecturer	Daniels Hall	Hands-on STEM activity
3:00 PM	David and Ms. Angie	Daniels Hall	Closing remarks
3:30 PM	High School Advisor	Talley Student Union	High school students depart

5.0 Resources

NC State SHPE is recognized as an official student organization on campus and therefore has access to several resources that will be used to execute the campus visit. As part of WMEP, we also have financial resources that enable us to host these kinds of events.

5.1 Materials and Tools

The Engineering Resource Room is able to supply SHPE with the materials and tools needed for a variety of hands-on STEM activities.

5.2 Network of Professionals

The SHPE chapter at NC State prides itself in building a network of individuals enthusiastic to participate in its activities as volunteers, mentors and donors. This network will be utilized to carry out the campus visit, as there will be no labor expenses aside from meals.

5.3 Transportation

Commuting within NC State's campus is easily accomplished by means of the public transit system. There is no cost to any individual for using this service.

5.4 Room Reservations

NC State SHPE is able to request a room under the organization's name without incurring costs.

5.5 Financial Support

As mentioned in the budget assessment, there are several funding options for this event. WMEP is the likely source, but in any case there will be no out-of-pocket expenses required by MHS students to participate.

6.0 Project Leadership

In order for the NC State campus visit to be executed at the high standard set by SHPE, we will require the skills of several individuals. The responsibilities of these individuals are listed below:

6.1 April González

- Qualifications:
 - NC State SHPE Jr. Chapter Chair
- Responsibilities:
 - Manage the day-to-day affairs associated with the SHPE Jr. Chapter.
 - Serve as the point of contact of the SHPE Jr. Chapter for communicating with high school administration contacts, students, and parents
 - Coordinate use of school facilities in order to conduct Jr. Chapter activities
 - Ensure students in leadership positions are responsible for promotion of SHPE Jr. within their schools
 - Assist with planning and execution of campus visit.

6.2 David Delgado

- Qualifications:
 - NC State SHPE President
- Responsibilities:
 - Coordinate activities with other SHPE officers, and manage the day-to-day affairs of the chapter (i.e., general body meetings and communication)
 - Build and maintain relationships between SHPE and partnering organizations (i.e., NSBE, SWE, AISES, Engineering Ambassadors, etc.)
 - Present chapter performance evaluations to Regional 7 Team as well as external donors that support our chapter
 - Recruit Hispanic college students in STEM majors at NC State through partnerships with University Open House, the Minority Engineering Program, etc.

6.3 Angelitha Daniel

- Qualifications:
 - NC State SHPE Advisor
 - WMEP Director
- Responsibilities:
 - Assist with the planning and funding of the campus visit
 - Give approval for funding of WMEP programs and events
 - Give approval for final schedule of campus visit
 - Facilitate college student panel the day of the campus visit
 - Communicate with MHS advisor to ensure proper documentation is provided to ensure a successful visit.

6.4 High School Advisor

- Qualifications:
 - MHS SHPE Jr. Advisor (Prospective)
- Responsibilities:
 - Coordinate SHPE Jr. Program activities at MHS
 - Serve as a mentor for SHPE Jr. leadership
 - Serve as the point of contact for receiving and delivering documentation required for events (i.e., event registration and liability release forms) from NC State SHPE advisor.

7.0 Schedule

Several action items will need to be overseen and completed by individuals listed in the previous section. A projected timeline with the start and completion dates of these tasks is shown in Figure 4.

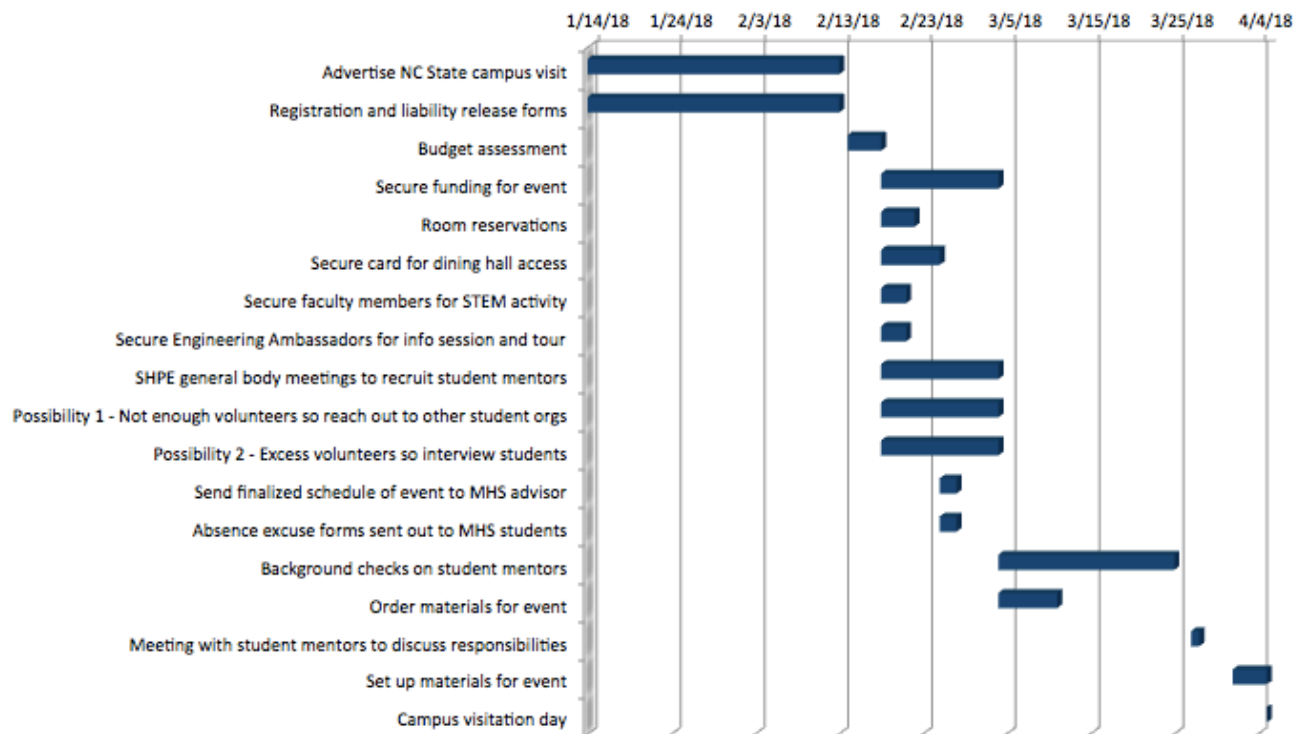


Figure 4. Gantt chart of tasks leading up to NC State campus visit

7.1 Important Dates

- January 14, 2018
 - Advertising for the campus visit begins by means of digital flyers and in-person promotion of the event by NC State SHPE members at MHS
- February 14, 2018
 - Registration and liability release forms turned in to NC State SHPE chapter to get final participant list
 - Budget assessment developed according to list
- February 18, 2018

- Funding for event is secured, and SHPE begins to secure room reservations and volunteers to serve as student mentors
- Probability 1 – Given that there is a shortage of student volunteers, SHPE will reach out to other student organizations to find more mentors
- Probability 2 – Given that there is an excess of student volunteers, SHPE will conduct interviews to pick students with the best schedules to mentor MHS students
- February 25, 2018
 - Finalized scheduled of campus visit and absence excuse forms sent to MHS advisor
- March 4, 2018
 - Prospective student mentors run through a background check to determine eligibility to participate
 - Materials ordered for STEM activity
- March 27, 2018
 - SHPE assembles student mentors and panelists in order to discuss logistics of event and address any concerns
- April 1, 2018
 - Materials and tools for STEM activity are set up
 - SHPE and NC State gifts for students are collected and grouped together for easy distribution
- April 5, 2018
 - NC State Campus Visitation Day

8.0 Costs

Table 2 lists the costs associated with the campus visit for an estimated 30-student group. Note that services and tools provided by NC State at no additional cost to SHPE are not included in this report. Therefore, the only costs that would be incurred by NC State SHPE include the lunch provided to students, the materials required for the liquid nitrogen ice cream activity and souvenirs for students to have a tangible memory of their NC State campus visit. The only costs that would be incurred by MHS include the transportation of students from MHS to NC State and back.

Table 2. Projected expenses for NC State campus visit for 30 student participants

Detailed Expense Report			
Item	Unit Cost	Quantity	Total Unit Cost
Lunch at Fountain Dining Hall	\$9.10 per student	30 students	\$273.00
Traveling expenses (MHS to NC State)	\$0.54 per mile	24 miles (round trip)	\$12.96
Liquid nitrogen	\$2.00 per liter	20 liters	\$40.00
Half and half	\$5.00 per container	6 containers	\$30.00
Vanilla	\$10.00 per bottle	1 bottle	\$10.00
Sugar	\$2.39 per bag	3 bags	\$7.17
Chocolate syrup	\$2.49 per bottle	6 bottles	\$14.94
Sprinkles	\$2.00 per bottle	6 bottles	\$12.00
SHPE stickers	\$56.00 per 50 stickers	1 order	\$56.00
NC State bag	\$2.00 per bag	30 bags	\$60.00
Custom water bottle	\$2.00 per bottle	30 bottles	\$60.00
Total Cost			\$576.07
Approximate Cost per Student			\$19.20

9.0 Summary

SHPE Jr. is an opportunity to strengthen the access, recruitment and retention of minority students in STEM. The NC State campus visit promotes these three objectives in one event by maximizing student exposure to college life and the support network that is SHPE. Below are the main points covered in this proposal:

- The current need to improve the levels of performance and persistence of Hispanic students in postsecondary STEM education relative to their peers.
- The goal of SHPE Jr. is to increase the presence of Hispanics enrolled in STEM fields of study in higher education.
- A high level view of the 4-2-1 SHPE Jr. curriculum intended to strengthen access, recruitment and retention of minority students in STEM fields.
- A list of the ways an NC State campus would improve the access, recruitment and retention of minority high school students in STEM.
- An overview of the funding options available to NC State SHPE that make SHPE Jr. programs financially sustainable and desirable from all perspectives.
- Suggestions and plans for advertising the campus visit in order to ensure the program has a high number of registered students (documents found in Appendix A and Appendix B).

- A detailed budget and schedule of the campus visit; the projected date of the visit is April 5, 2018 with an approximate cost of \$19.20 per student.
- A four-month timeline of the tasks required to execute a successful campus visit, along with the program's leadership and their responsibilities.


10.0 Recommendation

The NC State SHPE Chapter is confident that the implementation of a SHPE Jr. Chapter at MHS will augment the success of students by providing scholarships, mentors, tutors and exposure to college life to overcome persistent educational barriers and encourage students to pursue STEM fields. By exposing students to college and an academic support network while in high school, we intend to prepare them to successfully pursue undergraduate studies.

11.0 References

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Appendix A - Individual Membership Form (Courtesy of The SHPE Regional Junior Representative Training Handbook)

 <p>The Society of Hispanic Professional Engineers 1444 Duke Street Alexandria VA 22314 office: (703) 373-7930 fax: (703) 773-7786 www.shpefoundation.org MEMBERSHIP APPLICATION FORM (July 1 through June 30)</p>	
APPLICATION TYPE	
<input type="checkbox"/> New Member <input type="checkbox"/> Renewal: Have been a member since _____ <input type="checkbox"/> Address Change <input type="checkbox"/> Chapter Transfer	
MEMBERSHIP TYPE (See reverse side for qualifications for each type)	
<input type="checkbox"/> SHPE Jr. Chapter <input type="checkbox"/> At-Large Member	
Chapter Affiliation (School Name): _____	
If you are currently a SHPE Officer, please indicate your position:	
CONTACT INFORMATION	
Name: _____	Birth Date (mm/dd/yy) _____
First MI Last	Gender: <input type="checkbox"/> F <input type="checkbox"/> M
Current Address: _____	Home Phone: _____
	E-mail Address: _____
EDUCATIONAL BACKGROUND	
Grade Level: <input type="checkbox"/> 12 <input type="checkbox"/> 11 <input type="checkbox"/> 10 <input type="checkbox"/> 9	
Name of High School: _____	
High School Address: _____	
Honor Courses Completed or Currently Enrolled: _____ _____ _____ _____	AP Courses Completed or Currently Enrolled: _____ _____ _____ AP Exam Type and Score _____ _____
College Credits Earned to Date: _____ _____	
Regular GPA (On a 4.00 scale) <input type="checkbox"/> 4.00 <input type="checkbox"/> 3.99-3.50 <input type="checkbox"/> 3.49-3.00 <input type="checkbox"/> 2.99-2.50 <input type="checkbox"/> 2.49-2.0 <input type="checkbox"/> <2.00	
Honors/AP GPA (On a 5.00 scale) (Only if you have taken Honors or AP courses) <input type="checkbox"/> 5.00 <input type="checkbox"/> 4.99-4.50 <input type="checkbox"/> 4.49-4.00 <input type="checkbox"/> 3.99-3.50 <input type="checkbox"/> 3.49-3.00 <input type="checkbox"/> 2.99-2.50 <input type="checkbox"/> 2.49-2.00 <input type="checkbox"/> <2.00	
EDUCATION PLANS	
College(s)/University(ies) You Would Like to Attend: _____ _____	
What Would You Like To Study/Major in College: _____	Date Expect to Enter College (mo/yr): _____
INFORMATION RELEASE	
May we include your email address in the SHPE-JR listserv for information on scholarships, colleges, etc	<input type="checkbox"/> Yes <input type="checkbox"/> No
May we include your contact information in the SHPE Internal Directory?	<input type="checkbox"/> Yes <input type="checkbox"/> No
May we release your contact information outside of SHPE?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Student's Signature: _____	Date: _____
If student is under the age of 18, application must include parent's/legal guardian's signature	
Parent/Legal Guardian Signature: _____	Date: _____

MEMBERSHIP BENEFITS	
<ul style="list-style-type: none"> • Membership certificate • Complimentary SHPE Magazine for High School • Local Chapter Benefits – discounts at meetings • Eligible for national awards • Eligible to nominate recipients for national awards • Receive registration discounts at our annual National Technical and Career Conference (NTCC). 	<ul style="list-style-type: none"> • Leadership training and career awareness • Networking opportunities at conferences and seminars • Information on employment and professional advancement • Access to Internships and Scholarships • Opportunity to enter Technical competitions • Registration discounts at regional events (ETCC/WCCE/ME)
REQUIREMENTS FOR MEMBERSHIP	
<p><u>Regular/Professional Members (\$45/year or \$500/lifetime)</u> A Regular/Professional member shall be a person who at a minimum holds an engineer-in-training certificate or a bachelor's degree in any discipline of engineering, engineering technology, mathematics, physical science or a mathematically based science or technical field*. Six years of experience as an engineer or in a mathematically based science or technical field* or engineering educator may be substituted for the bachelor's degree. Regular/ Professional members shall be entitled to cast one vote in elections of officers and all business that the Board of Directors refers to the membership. Regular/Professional members may hold a National Board position.</p> <p><u>Regular/Professional Members – Recent Graduate (no fee)</u> For persons who qualify for regular membership and have graduated less than six (6) months ago. This person will receive a one-year (July 1-June 30) free membership and is entitled to all mentioned benefits above.</p> <p><i>Recent Graduate Requirement:</i> On the application the sections for Major, Last Graduation Date, Degree, and University Name/Location must be filled out.</p>	<p><u>Associate Members (\$35/year or \$400/lifetime)</u> An associate member shall be a person who believes and supports the purpose of this organization. He/She shall not be entitled to nominate, vote or hold a position in the National Board. Associate members shall be extended all privileges of a Regular/ Professional member less those exempted above.</p> <p><u>University Student Members (\$5/year)</u> Student members shall be students enrolled in a curriculum leading to a degree in engineering, engineering technology, mathematics, physical science or a mathematically based science or technical field*. Student members shall be entitled to nominate, vote and hold positions on the National Board to the extent expressly set forth in Section 15, 20.5 or elsewhere in the SHPE National Bylaws.</p> <p><u>Jr. SHPE Members – (no fee)</u> Student members shall be students enrolled in a high school and interested in pursuing a degree in engineering, engineering technology, mathematics, physical science or a mathematically based science or technical field.</p> <p>Other memberships within SHPE include: Honorary, Guild and Industrial Partnership Council. Please visit our website for more information on these membership types.</p> <p>*Please visit our website at www.shpe.org for a complete list of qualifying discipline/degrees for regular membership.</p>
CODE OF ETHICS	
<p>Members of the Society of Hispanic Professional Engineers shall uphold and advance the integrity, honor and dignity of SHPE by: being honest and impartial and serving with fidelity our organization and our community; striving to increase the development of Hispanics in engineering, math, science, and other technical professions; and using their knowledge and skills for the advancement of Hispanics to achieve educational excellence, economic opportunity and social equity. To achieve these goals, members shall:</p> <ol style="list-style-type: none"> 1. Act in a professional manner maintaining integrity and truthfulness and avoiding conflicts of interest. 2. Respect and protect the privacy, rights and dignity of others and maintain confidentiality when required. 3. Issue statements or present information only in an objective and truthful manner. 4. Treat fairly all colleagues and co-members, recognizing their unique contributions and capabilities. 5. Present a professional image in dress as well as behavior at all SHPE functions or while wearing the SHPE name and/or logo. 6. Call attention to unprofessional, unethical or inappropriate behavior and notify the appropriate leadership or authority if such behavior continues or threatens the safety or welfare of others. 7. Accept responsibility for their actions and recognize the contributions of others; seek critical review of their work and offer objective criticism of the work of others. 8. Continue their professional development throughout their careers, and provide opportunities for the professional development of those that follow them. 9. Be fiscally responsible with SHPE funds by spending within approved budgets and following financial guidelines set by the SHPE Inc. National Board of Directors, Local Region, Local Chapter, etc., as appropriate. 10. Abide by the National Bylaws, policies, procedures and guidelines as established by SHPE Inc. <p>Please visit our website for more information on the SHPE Code of Ethics and Judiciary Process.</p>	

Appendix B - Liability Release Form (Courtesy of The SHPE Regional Junior Representative Training Handbook)



Accident Waiver and Release of Liability

Event Name	
Event Date	
Event Location	

I HEREBY ASSUME ALL OF THE RISKS OF PARTICIPATING IN AND/OR VOLUNTEERING AT THIS ACTIVITY OR EVENT, including by way of example and not limitation, any risks that may arise from negligence or carelessness on the part of the persons or entities being released, from dangerous or defective equipment or property owned, maintained, or controlled by them or because of their possible liability without fault.

I certify that I am physically fit, have sufficiently prepared or trained for participation in the activity or event, and have not been advised to not participate by a qualified medical professional. I certify that there are no health-related reasons or problems which preclude my participation in this activity or event.

I acknowledge that this Accident Waiver and Release of Liability Form will be used by the event holders, sponsors, and organizers of the activity or event in which I may participate, and that it will govern my actions and responsibilities at said activity or event.

In consideration of my application and permitting me to participate in this event, I hereby take the actions noted below for myself, my executors, administrators, heirs, next of kin, successors, and assigns vis-à-vis the following ENTITIES OR PERSONS: Society of Hispanic Professional Engineers (SHPE), and/or their directors, officers, employees, volunteers, representatives, and agents, the activity or event holders, activity or event sponsors, and activity or event volunteers.

(A) I WAIVE, RELEASE, AND DISCHARGE the entities or persons mentioned in this paragraph from any and all liability, including but not limited to, liability arising from the negligence or fault of the entities or persons released, for my death, disability, personal injury, property damage, property theft, or actions of any kind which may hereafter occur to me including my traveling to and from this event;

(B) I INDEMNIFY, HOLD HARMLESS, AND PROMISE NOT TO SUE the entities or persons mentioned in this paragraph from any and all liabilities or claims made as a result of participation in this activity or event, whether caused by the negligence of release or otherwise.

I acknowledge SHPE and their directors, officers, volunteers, representatives, and agents are NOT responsible for the errors, omissions, acts, or failures to act of any party or entity conducting a specific event or activity on their behalf.

I hereby consent to receive medical treatment which may be deemed advisable in the event of injury, accident, and/or illness during this activity or event.

I understand at this event or related activities, I may be photographed. I agree to allow my photo, video, or film likeness to be used for any legitimate purpose by the event holders, producers, sponsors, organizers, and assigns.

The Accident Waiver and Release of Liability shall be construed broadly to provide a release and waiver to the maximum extent permissible under applicable law.

I CERTIFY THAT I HAVE READ THIS DOCUMENT; AND I FULLY UNDERSTAND ITS CONTENT. I AM AWARE THAT THIS IS A RELEASE OF LIABILITY AND A CONTRACT AND I SIGN IT OF MY OWN FREE WILL.

_____	_____	_____	_____
Print Participant's Name	Age	Signature (if under 18 year old, Parent or Guardian must also sign)	Date

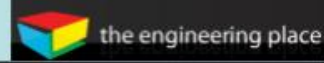
PARENT / GUARDIAN WAIVER FOR MINORS (Under 18 years old)

The undersigned parent or natural guardian does hereby represent that he/she is, in fact, acting in such capacity, has consented to his/her child or ward's participation in the activity or event, and has agreed individually and on behalf of the child or ward, to the terms of the Accident Waiver and Release of Liability set forth above. The undersigned parent or guardian further agrees to save and hold harmless and indemnify each and all of the parties referred to above from all liability, loss, cost, claim, or damage whatsoever which may be imposed upon said parties because of any defect in or lack of such capacity to so act and release said parties on behalf of the minor and the parents or legal guardian.

_____	_____	_____	_____
Print Participant's Name	Age	Signature of Parent or Guardian	Date

Appendix C - Sample STEM Night Activity (Courtesy of The Engineering Place at NC State)

Straw Rockets



Objective: Build a rocket that you can launch by blowing into a straw. How far can your design fly?

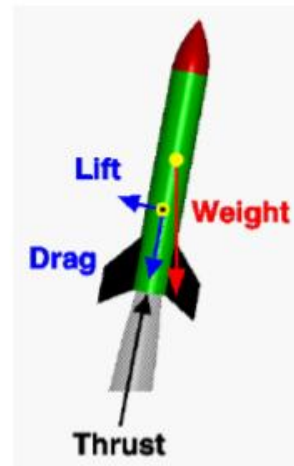
Process:

Use the provided material to design and build a rocket that can be launched from the provided straw.

Materials:

- 1 Straw
- Construction Paper
- Misc. Material
- Tape

Assessment: Test your rocket by blowing air through the straw and determining which design flies the farthest.



How far did your rocket go?

What slowed your rocket from going as far as it could?

What would you do differently next time?