

# UT ARLINGTON PREFRESHMAN ENGINEERING PROGRAM



**Student and Parent Handbook**



## **MISSION STATEMENT**

The Prefreshman Engineering Program (PREP) provides a challenging academic program designed to motivate and prepare middle and high school students for success in advanced studies leading to careers in science, technology, engineering or mathematics fields.

PREP-USA is a national program with an emphasis on increasing the number of women and underrepresented minorities in these fields.



Dear PREP Student,

Congratulations and welcome to the 37<sup>th</sup> year of PREP! You are now beginning a program that can make a big difference in your life, both academically and personally. We appreciate the commitment that you and your family have made for you to attend PREP this summer. We encourage you to take a full advantage of it. Use this time to think about your dreams for your future and to build the skills and knowledge that will help you make those dreams a reality. Work hard to learn, discover, and grow. Through investing in PREP, you invest in yourself!

Our PREP staff--the Instructors, your Program Assistant Mentor (PA), the site director, office staff and counselors are here to assist you and we want PREP to be the best program possible. So, tell us what you need to do your best. If you have any concerns, talk to your PA about them. If they are serious and don't get resolved, bring them to the attention of your Site Director or, after that, to me at the PREP Central Office.

Succeeding at PREP means hard work, responsibility and accountability, but you were given this opportunity because we believe that you can do it, and do it well. PREP is worth your efforts. When you graduate, you'll know you've accomplished something you can be really proud of and be able to share your experience with others. Our PREP graduates have demonstrated outstanding success in high school, college and later employment. We'll expect this for you, too.

Let's make this a wonderful, productive summer for both you and for us!



Sincerely,

A handwritten signature in black ink, which appears to read "R. Reyna".

Raul (Rudy) A. Reyna, Ph.D.  
Executive Director

RR/mgg

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"If you only look at what is,  
you might never attain what could be."

-Unknown

# INTRODUCTION

Dr. Manuel P. Berriozábal, a professor of mathematics at UTSA, founded the San Antonio Prefreshman Engineering Program (PREP) in 1979. Since then over 16,000 students in the San Antonio area have completed at least one summer of PREP. Since 1986, PREP has been replicated in 13 other Texas cities as the Texas Prefreshman Engineering Program (TexPREP). In 1996, a grant was awarded by NASA to provide for the replication of PREP at colleges throughout the United States. This program was previously referred to as Proyecto Access and is now PREP USA. Remaining PREP USA sites and all new sites beyond Texas are operational at five campuses across the country. Please visit [www.prep-usa.org](http://www.prep-usa.org) for additional information on PREP.

PREP is an academically intense, mathematics-based, summer project conducted at most college and university campuses throughout the City of San Antonio. The program identifies achieving middle and high school students with the interest and potential for careers in engineering, science, technology, and other mathematics-related areas and reinforces them in pursuit of these fields. Enrollment particularly targets students who are female and members of minority groups that traditionally have been underrepresented in these professions.

PREP stresses the development of abstract reasoning and problem solving skills, as well as the application of this knowledge, through coursework, team projects, class presentations, and examinations. In addition to a strong academic curriculum, PREP provides career awareness speakers, field trips, and courses taught by college instructors, high school teachers, military officers, and mentoring by undergraduate students majoring in engineering, mathematics, science or technology.

**As a student at PREP, your first priority is to learn!** An orientation is held the first day of classes to provide students with an overview of the PREP program. The topics discussed include PREP goals and expectations, conduct, roll call procedures, library privileges, transportation, counseling assistance, guest speakers, lunch procedures, attendance requirements, classroom rules, grading procedures, and curriculum content.

Placement tests also are conducted on the first day. Based on this, you'll be assigned to a group consisting of 20 or more students who are at approximately the same mathematical and grade level. Each group is assigned a Program Assistant Mentor (PA), who is a college student usually majoring in math, science, or engineering. Their role is to serve as a guide and mentor for the student throughout the entire summer program. **Note:** Any student who feels they have been placed in a group that is not challenging enough should consult with their Site Director to request a re-evaluation.

On a daily basis, the PAs will:

1. Conduct roll call and ensure the students' safety and appropriate behavior throughout each PREP day.
2. Attend classes and laboratories with students, providing tutoring for students, and assistance to instructors, as needed.
3. Supervise Research and Study period.
4. Assist with the preparation of special PREP activities, including competitions and field trips.
5. Maintain records of students' work and grade daily student journals.

## TYPICAL PREP SCHEDULE

A typical day at PREP consists of presentations by guest speakers, lectures, classes, homework, and special projects. The day begins with roll call by PAs at a designated location. Students are given buttons or nametags that are to be worn at all times during the designated PREP hours and are collected at the end of the day. The buttons have the student's name, identification number and assigned PA's name.

The first activity of each day is a presentation by a Career Awareness speaker. Insights into job related experiences and various careers are explored. Students are encouraged to interact with the speaker during the question and answer period. Students are reminded to conduct themselves in a respectful, appropriate manner with all our guest speakers here at PREP. Remember, they are donating their time to help you learn.

Following this activity, students attend classroom lectures, participate in laboratory assignments and have a lunch break, usually from 12:00 p.m. until 1:00 p.m. daily.

## PREP POLICIES AND REGULATIONS

**The following regulations must be observed at all PREP Sites:**

1. Students must attend all classes, unless excused by the Site Director.
2. Students must be on time for daily roll call and classes. If a student is absent, tardy, or requesting an early dismissal, the parent or guardian must notify the assigned PREP site by writing a letter or calling their office **24 hours** in advance to obtain an **Excused Absence**. Students must provide a written note from the parent or a physician upon returning to the PREP program. Students with **5 tardies** or **early dismissals** may be asked to resign from the program.
3. Excused absences are approved by the Site Director. A **maximum of three excused absences** is allowed for the program. On the fourth absence, the student will be dismissed. Students are reminded that it is difficult to make up work after the second consecutive absence. **Unexcused absences** are not allowed and will result in dismissal from the program.
4. The dress code must be strictly adhered to. Students are to wear modest comfortable, appropriate clothing. Items of dress strictly prohibited are tank tops, inappropriate shorts (inseam must be 4" or greater), spandex clothing, slip dresses, sheer clothing, shirts with offensive sayings; caps are permitted only during special events held outside. Body piercing jewelry is prohibited except for rings, studs or other traditional jewelry worn in the ear. Tongue, eyebrow, and nose rings or studs are not permitted. Unconventional hair colors or hairstyles that are distracting and/or disruptive are prohibited.

5. Students must attend the graduation ceremony to complete the PREP program and receive a certificate for their time in PREP. If absent within the excused absences of three (3) days on the closing day, then he/she will be allowed to be promoted, but will not receive a certificate. The student remains eligible to earn high school elective credit if desired.
6. Students should only bring classroom material and personal care items to campus. PREP is not responsible for lost and damaged items. Cell phone use is at the discretion of the site staff.
7. Fireworks, guns or knives, or any other weapons are strictly prohibited and will result in dismissal from the program.
8. Nametags are given out to students at the beginning of the day during roll call and must be worn at all times during the designated PREP hours. Any PREP staff member has the right to ask for a participant's nametag to be surrendered, if a violation of policy or rule has occurred. If this happens, both the student and parent will be notified and disciplinary action will be administered, as needed. At the end of the day nametags are collected.
9. Food and drinks are not allowed in the lecture halls, labs or classrooms. Smoking, alcohol, chewing gum, and gambling are not permitted.
10. Unruly, unsafe or inappropriate behavior is grounds for dismissal.
11. Communication, including by social media, between minors and staff/counselors outside of official communications of the program for minors is prohibited.
12. Each site may have additional rules; for example, on some campuses students are not allowed to use elevators, unless written documentation is provided from a doctor.

## **MEDICATION**

There are many legal issues involved in a student taking prescribed medication while at PREP. Generally, sites do not have access to a college/university health center, thus it is much easier, and safer, if arrangements can be made for the student to schedule taking their medication before or after attending PREP. When this is not possible and there is access to a health center, the following steps **MUST** be taken:

1. The Parental Permission Form **MUST** be completed and returned.
2. The *Medication Description Form* **MUST** be completed by the attending physician and returned to the College/University Health Center. This details times, dosages, potential side effects, etc.
3. The parent/guardian must personally deliver the medication to the College/University Health Center (depending upon the requirements of the individual PREP site).
4. College/University Health Center staff must be informed of procedures for administering any medication, and required documentation maintained.

5. All physician directions, including any reporting requirements, **MUST** be strictly adhered to.
6. The parent/guardian should be informed immediately, if any problems or concerns arise.

**If a site does not have access to a health center, the parent/guardian must inform the site director to allow for the parent/guardian to administer either non-prescription or prescription medication. Students are not allowed to carry non-prescription nor prescription medication while at PREP.**

## **ROLL CALL**

Roll call is taken twice during the day. Punctual attendance at roll call is necessary. It is critical for student accountability and for staff to share information concerning special events, field trips, and special projects. The following rules must be complied with:

1. Be at the designated site on time with your PA for roll call. It is recommended that you be there 5 minutes early.
2. When roll is being called, remain quiet with your group. Do not interrupt the PA or disrupt any other group.
3. If you fail to report for roll call, you will be considered absent and your parents/guardians will be notified immediately.
4. All restroom needs, water breaks, sharpening pencils, etc., should be taken care of before roll call.

## **COMPUTER LABS AND LIBRARY**

During the summer PREP program, college students are attending summer school and using the library and other campus facilities. Keep in mind that we are guests on the campus and, as such, we must observe and respect the students, teachers and other faculty members involved in the summer college sessions. Quiet and appropriate behavior is

Computer lab use will be at the discretion of the TexPREP instructors and staff.

behavior is expected.

While in the library it is important to remember the following:

1. You must wear your nametag at all times.
2. Study rooms are **off limits** to students at all times.
3. No food or drinks are allowed in the library.
4. No playing around in the library. Disciplinary action will be administered for inappropriate or disruptive behavior.
5. Begin leaving the library **10** minutes before roll call.
6. Use of the Internet is allowed only for appropriate research and under supervision.



# TRANSPORTATION

Each student is responsible for their own transportation to and from their assigned PREP site. Arlington ISD students may choose to ride an AISD bus to TexPREP. For your safety it is important to observe the following guidelines when riding a bus:

1. Sit near the front of the bus.
2. Sit with people you know.
3. Be at the assigned pick up location in plenty of time to meet the bus. Buses will not wait
4. Don't horseplay.
5. If coming by car, always have your driver drop you in parking lot 36.
6. Notify us if you have a change in transportation.

AISD Bus Drivers and security staff are aware of PREP and work very hard to ensure our students' safety.

If a student will be picked up from the PREP site, it is important that the student and parent/guardian coordinate a permanent time and location in order to avoid any confusion. This should be a location designated by the Site Director for this purpose. **The PREP staff will provide supervision only during official PREP hours. Parents are asked to keep to this schedule so as to best ensure their child's safety. Due to safety concerns, students must not remain on campus after the official PREP hours designated by the site director. If a student repeatedly violates this policy, they will be dismissed from the program.**



# SUPPORT SERVICES

**Free/Reduced Lunch:** PREP participates in the Summer Food Service Program (SFSP) sponsored by the Texas Department of Agriculture. Through SFSP, most participants receive daily free lunch. The students who qualify for the daily free or reduced lunch are students who participate in the lunch program during the regular school year. In the case where 50% of the students qualify for free or reduced lunch at a particular PREP site, every student at that site will be eligible to receive free lunch.

**Academic Credit:** The Texas Education Agency has authorized school districts to award one elective credit to high school students for each successfully completed summer of PREP. Please ask the Guidance Counselor at your school about this credit. If authorized by the student and parent, the PREP office at UTSA will forward the students' overall numerical grade in late September to the school indicated.

**Remember, the elective credit may be accumulated into your GPA average and class rank at your school.** You must have a final grade of 69.5 or better in order to successfully complete PREP.

## FUTURE SUMMERS AT PREP

Applications for the PREP program for the following year are available in early November. Schools receive First Year applications and students are encouraged to see their counselor, math or science teacher to obtain them. Applications for Second, Third, and Fourth Year participants will be e-mailed to the e-mail address(s) on file. Please note that if your contact information (e-mail, home address, phone number, etc.) changes, you must contact the Central Office to update. If you have not received an application by mid-November, please contact the PREP Office to request one. Enrollment and site assignment is on a “first come, first served” basis. Additionally, participants who skip a summer at PREP are not automatically sent an application, so please contact the PREP Office. The e-mail contact address for PREP is [contact@prep-usa.org](mailto:contact@prep-usa.org).

**UPREP:** University PREP (UPREP) offers STEM related courses for college credit to expose and prepare former Third or Fourth Year PREP students in high school to an actual college experience. In addition, a students are given the opportunity to participate in student development workshops, volunteer opportunities, internships, and university research projects.

## LIFE AFTER PREP

**Follow-up Surveys:** Follow-up surveys are conducted annually by the PREP Central Office. The surveys assist with keeping track of the students who have successfully completed at least one year of the program. We are interested in following the progress of our former students throughout their high school and college careers. The results of these surveys are utilized in numerous ways. We maintain current records of our former students so that we may distribute their information to scholarship and internship programs and college recruiters. Also, we share the success of our students with PREP sponsors and benefactors to continue their support in our program and investment in our community. The survey is also used to improve the program. Thus, completing and returning the survey promptly allows us to help you, as well as other future PREP students.

**Opportunities and Enrichment Programs:** Students are encouraged to take advantage of other nation-wide enrichment programs after completing four summers of the PREP Program. Through PREP’s annual follow-up survey, we are able to share and release information about former participants, so they can learn about opportunities to attend other college and national enrichment programs.

**Job Opportunities:** Students who have completed at least one year of college with a 2.5 or higher GPA are eligible to work as a **Program Assistant Mentor (PA)** for PREP. The position is for full time summer employment. Duties consist of mentoring and monitoring a group of 20 or more students for 8 weeks, attending and assisting students in the classroom, supervising a Research and Study period, maintaining students’ records, and assisting with PREP’s daily operations. At the conclusion of the program, a selected group of PAs continue to assist with the following activities: preparing the final report, assisting with the follow-up survey, and evaluating the program. The rate of pay depends upon the sponsor, level of college education and major, and previous PREP experience.

## **MOST FREQUENTLY ASKED QUESTIONS**

### **What if ...**

- ...you need to speak to a PREP administrator? Tell your PA.
- ...you are late to PREP? Go to NH 100, wait for a PREP staff member, and tell them that you have arrived late.
- ...you have found a book or personal item that is not yours?  
Turn it in to your PA.
- ...you need a parking permit? Tell your PA.
- ...you need to call your parents? Ask your PA.
- ...you will be absent? Refer to "Regulations" and discuss with Site Director
- ...you lose or misplace your name tag/button? Tell your PA.
- ...anyone on campus exhibits behavior that is inappropriate or makes you feel uncomfortable? Find and tell any PREP staff member immediately.
- ...you have lost something? Tell your PA immediately.
- ...you want advice about personal problems, college, test anxiety, or peer pressure? Tell your PA that you would like to speak to the counselor.
- ...you want to withdraw from PREP? Talk to your PA or a counselor to help you decide, or have your parent call the PREP office and an administrator will take care of the situation.

In case of any situation not mentioned above, the communication procedure that must be followed between the students and PREP staff is:

- (1) Program Assistant
- (2) Site Director
- (3) Central Office/Associate Director or Academic Coordinator
- (4) Executive Director of TexPREP

## CONCLUSION

The last day of the PREP program is the Closing Day Ceremony. All students who have successfully completed the program **must** attend graduation. Parents/guardians, family and friends are invited to attend the ceremony.

For graduates' final numerical grade to be sent to their school, parental permission is required. **Remember, the elective credit may be accumulated into your GPA average and class rank at your school. Students and parents are asked to sign a grade release at the end of the summer program.** If a student changes schools or did not sign a grade release form and would like their PREP grade sent to their school, the parent must request this in writing. The request must include the student's name, school name, PREP year and site location.

In addition to the information provided to you in this handbook, there are other things you, as a participant, must remember. You were accepted into this program on the premise that you are the best of the best and have earned your way. As such, we will treat you with respect and foster the development of your potential and skills. In return, we expect you to be respectful and courteous with all PREP staff members and classmates and to make a commitment to study and learn.

This handbook is provided for your information and use while at PREP. It is intended to serve as a guide for you and your parents/guardians throughout the program. Have a great summer!! Learn, discover, grow and, above all, enjoy your PREP experience!!!



## **APPENDICES**

## SAN ANTONIO PREFRESHMAN ENGINEERING PROGRAM

**2014 FACTS****PURPOSE**

To identify achieving middle and high school students with the interest and potential for careers in science, engineering and technology, and other mathematics-related areas and to reinforce them in the pursuit of these fields.

**ACADEMIC PROGRAM**

The mathematics-based program, approximately seven weeks in length, is presented over the course of three summers to students entering grades seven to eleven (see curriculum at right). The Texas Education Agency has authorized participating school districts in the state of Texas to award one elective credit toward high school graduation for each successfully completed summer of PREP.

The academic program is staffed by approximately 65 faculty members from various disciplines and industries such as college faculty, high school teachers, industrial engineers, scientists and mathematicians, and 80 Program Assistant Mentors, typically undergraduate engineering, mathematics, and science majors.

**ELIGIBILITY REQUIREMENTS**

Middle and high school students from all school districts within the Greater San Antonio Area are encouraged to apply. Year 1 requirements include:

- Parental permission;
- Recommendations from a mathematics teacher and a counselor, science or English teacher;
- Satisfactory conduct grades and an essay;
- Students in grades 6 and 7 require a 90 or better average in current mathematics, science and English class (85 or better if in honors or advanced placement);
- Students in grades 8, 9, and 10 require an 85 or better average in current mathematics, science and English class (80 or better if in honors or advanced placement);
- Students in grades 11 and 12 are admitted with special permission only.

Year 2, 3 and 4 requirements:

Students who successfully complete Year 1, 2 or 3 PREP are invited to apply for the following year of PREP.

**PROGRAM SUPPORT**

PREP receives financial and full-time in-kind staff support from public and private sectors: colleges and universities, the State of Texas, government agencies, public and private industry, foundations, individuals, school districts, the City of San Antonio, and the Texas Department of Agriculture Summer Food Service Program.

**TUITION AND FEES**

Transportation and daily free lunch is available to eligible low-income students through support provided by the Texas Department of Agriculture Summer Food Service Program and the City of San Antonio.

**CORE CURRICULUM****Year 1**

Logic and Its Applications to  
Mathematics  
Introduction to Engineering

**Year 2**

Algebraic Structures  
Introduction to Physics

**Year 3**

Introduction to Probability and  
Statistics  
Introduction to Technical  
Writing

**Year 4**

Computer Science  
Advanced Science and  
Engineering

**All Years**

Topics in Problem Solving  
Career Awareness Seminars

**SAN ANTONIO PREP SITES****Year 1**

- The University of Texas at San Antonio (Main & Downtown Campuses)
- St. Philip's College-MLK
- Palo Alto College
- Northwest Vista College
- Northeast Lakeview College

**Year 2**

- St. Philip's College-SWC
- San Antonio College
- Texas A&M University-SA

**Year 3**

- St. Mary's University

**Year 4**

- The University of Texas at San Antonio (Main Campus)

**PERIOD OF OPERATION**

June 16 to July 31, 2014

**2013 PROGRAM COST**

\$1,178,073

## PROGRAM RESULTS

In 2013, PREP enrolled 1,362 students, with 1,272 successfully completing the program. Of those students completing PREP, 72% were members of minority groups traditionally underrepresented in the fields of mathematics, science, and engineering; 56% were female; and 36% were from low-income families as defined by the Texas Department of Agriculture Summer Food Service Program income guidelines. Since the program's inception in 1979, 16,304 students have completed at least one summer component. Of the 12,520 former participants who are of college age, PREP obtained data\* from 11,253. The results (compiled from the 11,253) are as follows:

- 90%\*\* of all students who are of college age have attended (6,643) or graduated from college (4,574)
- 54%\*\* of the college attendees graduate from college
- 72% of the college graduates are members of minority groups
- 55% of the college graduates are female
- 44% of the college graduates are science, mathematics, or engineering majors
- 66% of the science, mathematics, and engineering graduates are members of minority groups
- 47% of the science, mathematics, and engineering graduates are female
- 90% of the college students (6,099), junior college graduates (474), and graduates (3,495) attended Texas colleges
- 54% of the college students (4,160), junior college graduates (364), and college graduates (1,534) attended San Antonio area colleges

\*Source: Data derived from THECB, the National Student Clearinghouse, and student follow-up surveys.

\*\*This is a minimum number as data is unavailable on the remaining college eligible students.

## DISSEMINATION

The Texas Prefreshman Engineering Program (TexPREP) was established in 1986 as the result of statewide replication of SA PREP. Currently the program is conducted in 13 Texas cities (see sites at right).

In 1996, a grant was awarded by NASA to provide for the replication of PREP at colleges throughout the United States. This program was referred to as Proyecto Access. (Remaining Proyecto Access sites and all new sites beyond Texas are listed under PREP-USA.)

## AWARDS AND CITATIONS

PREP has been the recipient of numerous local and national awards and citations. The following represent the most recent:

- *Best Practices in K-12 Science Education Compendium*, Bayer Corporation (2006, 2008, 2010)
- Citation, *What It Takes: PreK-12 Design Principles to Broaden Participation in Science, Technology, Engineering and Mathematics* for the Building Engineering and Science Talent (BEST) Commission, a Congressional blue ribbon panel on best practices in PreK-12 programs (TexPREP, April 2004)
- Texas Higher Education *Star Award* (TexPREP, October 2002)
- *Exemplary MSE Education Partnership Award*, Quality Education for Minorities (QEM) Network (TexPREP, February 2001)
- Citation, Texas Governor's Special Commission on 21<sup>st</sup> Century Colleges and Universities, *Higher Education in the 21<sup>st</sup> Century – Moving Every Texan Forward*, TexPREP is recognized as a model to promote the development of PreK-16 programs in college preparatory studies (TexPREP, January 2001)
- Citation, 1999 U.S. Department of Education White House Initiative on *Educational Excellence for Hispanic Americans* publication *What Works for Latino Youth* (TexPREP, October 1999)
- *Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring* (San Antonio PREP, September 1997)

For additional information, please contact:

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Executive Director - PREP  
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San Antonio, TX 78207-4415  
(210) 458-2060 / FAX (210) 458-2061 E-mail: [contact@prep-usa.org](mailto:contact@prep-usa.org)

## TexPREP 2014 SITES

### Arlington

The University of Texas at Arlington

### Austin

Huston-Tillotson University

The University of Texas at Austin

### Corpus Christi

Del Mar College

### Dallas

Brookhaven Community College

Cedar Valley College

Eastfield College

El Centro College

Mountain View College

North Lake College

Richland College

University of Dallas

The University of North Texas at

Dallas

The University of Texas at Dallas

### Edinburg

The University of Texas-Pan American

### Fort Worth

Tarrant County College-Northwest Campus

Tarrant County College-South Campus

Texas Wesleyan University

### Harlingen

Texas State Technical College

### Houston

University of Houston-Downtown

### Laredo

Texas A&M International

University

### Lubbock

Texas Tech University

### McAllen

South Texas College-Pecan Campus,

Mid Valley Campus, &

Starr County Campus

### San Antonio

Northeast Lakeview College

Northwest Vista College

Palo Alto College

San Antonio College

St. Mary's University

St. Philip's College-MLK

St. Philip's College-SWC

Texas A&M University-San Antonio

University of Texas at San

Antonio (Main & Downtown)

### Victoria

The Victoria College

## PREP-USA

### Bronx, NY

Hostos Community College

### Jersey City, NJ

Jersey City University

### Las Cruces, NM

New Mexico State University

### Stockton, CA

University of the Pacific

### Orem, Utah

Utah Valley University

Visit our website at:

[www.prep-usa.org](http://www.prep-usa.org)



## WHAT DOES TexPREP MEAN TO STUDENTS

### The Texas Prefreshman Engineering Program

*“... in my advanced math class (TAG) I soared... I love anything to do with math, science, or technology, and PREP teaches them in depth.”*

Lloyd Austin Forbis • San Antonio PREP 1997, 1999  
Home Schooler, Grade 8

*“The guest speakers showed me that even those born into unsuccessful families can achieve success themselves.”*

Rubin E. Siller, III • San Antonio PREP 1998, 1999  
Pearsall High School, Grade 10

*“... by giving up three summers of my life, I will be getting one step closer to my dream of becoming a doctor and helping people.”*

Christine Gamez • San Antonio PREP 1997, 1998, 1999  
Pat Neff Middle School, Grade 8

*“... I love to figure out problem-solving questions. Where did I get that aptitude from, you might ask? Why, PREP of course!”*

Stephanie Alexis Cruz • San Antonio PREP 1997, 1998, 1999  
Providence High School, Grade 9

Like a beacon of light, PREP leads the way toward a brighter future...

Learn... Explore... Achieve... Discover...





# WHAT DOES TexPREP MEAN TO GRADUATES

## The Texas Prefreshman Engineering Program

***“PREP served as the most critical piece of a science and mathematics fund of knowledge...I credit PREP as a fundamental stepping stone in the educational part of my life.”***

Timothy Palomera, MD • San Antonio PREP 1984  
Family Practice, University Health System, San Antonio, Texas  
1998 University of Texas Men’s Athletics Team Physician  
1989 St. Mary’s University, President’s Scholarship  
1989 Appointment, US Naval Academy

***“As I excelled in math and science my curiosity for engineering grew...(PREP) prepared me to succeed as an engineer. I have an Architectural Engineering Degree with an emphasis on Construction Engineering & Project Management. So, thank you for holding my hand then, and leading the way!”***

Brenda Turner • San Antonio PREP 1985  
Project Office Engineer, Gilbane Building Company, Houston, Texas  
1997-1998 Associated General Contractors (AGC) Apex and Safety Awards  
1997 Gilbane Safety Award and Gilbane Builder of the Year

***“The technical experience encouraged me to be creative and seek my full potential... I learned early that education is the key to job security...”***

Dennis Martinez • San Antonio PREP 1983, 1984  
Space Station Robotics Instructor  
United Space Alliance, Houston, Texas

***“PREP has had a major impact in my success as a project engineer... The program taught me about engineering, problem solving and working with my peers.”***

Michael Ray Fuentes • San Antonio PREP 1987, 1988, 1989  
Project Engineer  
City Public Service, San Antonio, Texas  
Numerous scholarships to Rice University  
1989-PREP Scholarship

Like a beacon of light, PREP leads the way toward a brighter future...

***Learn... Explore... Achieve... Discover...***

## Appendix C

# UT Arlington PREP 2016 STUDENT AGREEMENT

Graduating from PREP will make an important difference in your high school, college, and future success. PREP staff is committed to maintaining standards of excellence. We must ensure that all PREP students are safe and have an environment that allows each one to do his or her best. Therefore, we require that all students and their parents understand and agree to PREP's rules before we finalize a student's admission. Remember, although our program standards are high, they are very attainable.

**IMPORTANT: Be certain you and your parent(s) or guardian read this agreement carefully. Think about each item before you sign the Student Pledge on page 8. Keep this page as reference.**

### ATTENDANCE

-I am aware that daily attendance is MANDATORY.

-I understand that I may be dismissed from PREP:

- with one unexcused absence;
- on the fourth excused absence (after three excused absences); or
- if I am late or leave early more than five times.

-I understand that, for an absence to be considered "excused":

- the Site Director must approve the absence;
- the absence must be approved in advance, except in an emergency; and
- PREP must receive a written note signed by a parent/guardian or doctor.

-I understand that I must be on time and attend all classes, labs, roll calls, etc. I know I must stay with my assigned group and follow my assigned schedule at all times.

-I understand that I must attend the Closing Day Ceremony to complete the PREP program.

### BEHAVIOR

-I agree to follow PREP standards of behavior -- to be courteous, respectful and committed to learning.

-I will not bring lighters, firecrackers, knives, or weapons of any type to any PREP site.

-I will not chew gum or tobacco or have any food or drinks in any of the college classrooms, labs, libraries, etc. I will be responsible for any damage(s) I may cause.

-I agree to wear only modest, safe and appropriate clothing. T-shirts must be tucked in. Shorts must have a 4" or greater inseam. Sandals or open-toed shoes, spandex clothing, tank shirts, slip dresses, sheer clothing, shirts with offensive sayings, and caps are NOT permitted. Unconventional hair colors or hairstyles that are distracting and/or disruptive are prohibited.

-I agree to follow all additional rules set by PREP sites; for example, on some campuses PREP students are not allowed to use elevators.

-I understand that PREP has a zero tolerance policy on a child's noncompliance with all PREP and/or host institution's rules and policies. In the event of a rule/policy violation, the site director may dismiss the child from the program. Some examples of rule violations include: cheating, plagiarism, leaving campus without permission, damaging property, physical violence, setting off fire alarms, or repeated patterns of less serious violations.

### OTHER

-I understand that according to the Texas Education Agency, all districts must award one (1) elective for high school graduation for students who successfully complete PREP. **The elective credit may be accumulated into your GPA average and class rank at your school.**

-I agree to complete the annual PREP Follow-Up Survey for graduates. (This is a short questionnaire to check on each student's academic progress. It is used for research on the impact of PREP and for reporting to PREP sponsors.)

### STUDENT PLEDGE

I will do my best to attend PREP every school day as scheduled from June 16 to July 31, 2014. I have read and understood PREP's requirements for students, particularly those on attendance, dress code, and student behavior. **By signing the Student Pledge, I promise to abide by these policies and all PREP rules. (For student signature see page 8 of acceptance packet.)**

### PARENT/GUARDIAN CONSENT

I approve of my child's participation in PREP. I understand this involves a commitment of approximately seven weeks attendance. I have read and understand PREP's requirements for students, in particular that **absences must be excused**. I will comply with these policies and all PREP rules. **(For parent/guardian signature see page 8 of acceptance packet.)**

JW/mgg

## PROGRAM LEARNING GOALS

PREP is an intellectually demanding, mathematics-based, academic enrichment program for middle and high school students. Its program is presented in seven (7) week sessions over the course of four summers, for a total of twenty-eight weeks.

The intent of PREP is to provide students who have demonstrated mathematical ability (through academic performance, participation in competitions and teacher/counselor recommendations) with the academic and intellectual competencies to succeed in high school, college preparation courses; in college programs in mathematics, science and engineering; and to facilitate their interest in and commitment to pursuing careers in mathematics, science and engineering. It is targeted toward, but not limited to, students who are members of minority groups or female, i.e., groups who have traditionally been underrepresented in the professions of mathematics, science and engineering.

The curriculum is designed to strengthen the students' ability to problem solve, reason, conjecture, and apply mathematical knowledge logically and systematically. It stresses the development of critical thinking, abstract reasoning, and systematic analysis. Through an integrated and hands-on approach, it demonstrates the application of mathematics to diverse disciplines, particularly to the fields of science, computer science, and engineering, and to a wide range of career opportunities. Students not only develop their basic mathematical skills and knowledge, but also learn to communicate and reason mathematically - both orally and in writing. In addition, through their experiences of success in a rigorous academic program, they learn that hard work, perseverance and commitment result in meaningful knowledge and pride in accomplishment.

Over the three year period, students take a series of classes. The foundation of these is mathematical logic and reasoning; this includes an intentional and consistent emphasis on utilization and problem solving. Specific course content is enhanced by experiences designed to promote a clear understanding of how mathematical concepts and procedures are applied, particularly in the fields of engineering, computer science and science. Integration of course material is formally built into the program through special events and projects. These challenge the students' critical and divergent thinking skills and allow for the innovative application of mathematical ideas. In addition, guest speakers from a variety of career fields in mathematics, science and engineering discuss how mathematical, science and engineering concepts are actually utilized within their professions. To summarize, the emphasis throughout is on developing mathematical thinking ability, as well as an understanding of its usefulness and significance.

**The course curricula for PREP was reviewed in depth in 1991 in order to ensure that it met the Curriculum and Evaluation Standards developed by the National Council of Teachers of Mathematics. It specifically addressed the following learning goals:**

### **Logic and Its Applications to Mathematics (Year 1)**

- Students will demonstrate the ability to understand and apply logical statements, compound statements (negation, conjunction, disjunction, conditional, and biconditional), logical equivalents, valid and invalid arguments, truth tables, rules of inference, paradoxes, elementary set theory (sets, subsets, union, intersection and complements, and properties of operations), Boolean Algebra (definition, examples, and properties), and switching networks (definition, examples, and switching statements).
- Students will demonstrate the ability to understand and utilize universal and existential quantifiers.
- Students will demonstrate knowledge of the basic concept of set theory.
- Students will demonstrate the ability to conjecture, and to test and build arguments.
- Students will demonstrate an understanding of the use of mathematics to symbolically represent ideas, relationships, and operations.
- Students will demonstrate the ability to communicate using the signs, symbols, and terminology of mathematics.
- Students will demonstrate an increased capacity for both critical and divergent thinking, as well as inductive and deductive reasoning.
- Students will demonstrate an increased ability to analyze and communicate their thinking processes.

### **Introduction to Engineering (Year 1)**

- Students will demonstrate knowledge of the history and philosophy of engineering, the engineering design process and mathematical tools, the use of computers in engineering, engineering ethics and standards of professionalism, and the job focus and also requirements for career preparation for various types of engineering fields.
- Students will demonstrate knowledge of basic engineering principles in the areas of work and energy, simple machines, light and optics, thermal science, and mechanics.

- Students will demonstrate the ability to apply engineering principles to team projects, i.e. airplane designs, security systems, egg drops, bridge design, solar reflectors, etc.
- Student will demonstrate knowledge of the relevance of distribution math and its link to engineering and study electrical engineering (middle school adaptation of the Infinity Project created by Texas Instruments and the SMU School of Engineering).
- Students will demonstrate the ability to apply the engineering design process and design a sound demixing device and describe techniques related to multi-channel surround sound.

#### **Algebraic Structures (Year 2)**

- Students will demonstrate knowledge of groups, rings and fields using the systems of integers and rational numbers as models, and the derivation of algebraic properties of these systems.
- Students will demonstrate knowledge of the basic concepts of set theory, operations involving sets, properties of abstract mathematical systems, and the use of deductive and inductive reasoning with proofs.
- Students will demonstrate the ability to represent situations and number patterns with tables, graphs, mathematical symbols and equations, and will be able to understand and communicate the relationships, patterns, and concepts.
- Students will apply algebraic concepts and procedures to problem solve.

#### **Introduction to Physics (Year 2)**

- Students will demonstrate knowledge of Mechanics: units and physical quantities, equilibrium of a particle, motion in a straight line, Newton's second law, motion in a plane, work and energy, inertia and momentum, circular motion, and equilibrium.
- Students will demonstrate knowledge of Electricity and Magnetism: Coulomb's Law, electric fields, potential, capacitance, current, resistance, electromotive force, direct current circuit, and magnetic fields.
- Students will demonstrate the ability to apply principles of physical science in the laboratory: friction linear air track, free-falling bodies, multiflash photography, the conical pendulum, capacitors in series and parallel, resistors in series and parallel, and Ampere's Law.

#### **Introduction to Probability and Statistics (Year 3)**

- Students will demonstrate an understanding of basic probability theory: counting procedures, addition rule, multiplication rule, and independence.
- Students will demonstrate knowledge of probability models: binomial, hypergeometric, Poisson, exponential, and normal.
- Student will demonstrate knowledge of descriptive statistics: tables and charts, measures of center, and measures of spread.
- Students will demonstrate knowledge of analytical statistics: confidence intervals for means and proportions, tests of hypothesis for means and proportions, and simple regression.
- Students will be able to collect, organize and evaluate data.
- Students will develop the ability to analyze, conjecture, and build arguments based on data analysis, and using logic, reasoning and problem solving techniques.
- Students will develop the ability to sort, analyze, and interpret numerical data using statistical software.

#### **Introduction to Technical Writing (Year 3)**

- Students will demonstrate increased clarity and effectiveness in their writing skills as particularly applicable to the disciplines of engineering and science. This includes techniques such as appeal to authority, appeal to original research data and appeal to logic.
- Students will demonstrate increased skill in technical writing methods: invention, assessment of purpose and audience, organization and development, revision, editing, style, grammar, and mechanics.
- Students will demonstrate their ability to produce clear, persuasive and efficient technical reports using word processing software and graphic techniques.

#### **Introduction to Water Science (Year 4)**

- Students will learn about watershed management, water quality and geographic information systems (GIS) in this relevance-based course.
- Students will apply knowledge by addressing local community watershed issues via service-learning.
- Students will work with watershed modeling using systems tools and will use GIS data as input to the system dynamics model to predict water flow levels.
- Students will be introduced to systems with the expectation that they will understand systems, systems thinking and a new way of solving problems.

- Students will be introduced to modeling using watersheds and will learn how to create a simple yet exercisable model of a watershed basin.
- Students will develop computer modeling skills using the Systems Thinking Educational Learning Laboratory with Application (STELLA) graphically driven simulation/modeling software and create a working watershed model using STELLA.
- Students will expand the computer model and use the model to analyze specific watershed issues.
- Students will work as teams to continue to expand their individual STELLA models, discuss and summarize their research findings and gain an understanding of their individual contributions to group knowledge and learning.
- Students will explore the utility of systems thinking and system dynamics in other fields such as business, engineering, etc. to open their minds to the value of systems thinking and how it can be universally used for problem solving.
- During the last week of TexPREP, students will present the results of their work to the local community involving such organizations as the National Resources Conservation Service, local water agencies, parents, and other community stakeholders.

#### **Introduction to Computer Science (Year 4)**

- Students will demonstrate a basic knowledge of the capabilities and application of computers; computer concepts and terms; basic hardware and software concepts; definitions of system components; computer architecture; networks and types of programming languages; computer security (i.e., spamming, viruses, worms, phishing, etc.) and social implications surrounding computers (i.e., copyright rules and ethical; use of computers).
- Students will demonstrate basic programming skills in an object oriented language such as Java, C++, C#, etc.
- Students will develop the ability to utilize computer software to assist with sorting, analyzing and interpreting data.
- Students will recognize that mathematical concepts and data can be represented utilizing a variety of graphic and numerical forms.
- Students will develop the ability to utilize computer software to present material clearly and effectively through the use of graphics, tables, etc.
- Students will learn about basic web technology including the client-server model, navigation and web site organization. Students will create a web site using a web development tool such as Microsoft's Expression Web Development System and modify programs to generate dynamic, interactive web pages.

#### **Introduction to Cyber Security (Year 4)**

- Through the study of Cyber Security, participants will learn to make informed decisions and apply them to the field of information technology (IT). They will gain advanced knowledge and skills in the application, design, production, implementation, maintenance, evaluation, and assessment of products, services, and systems. They will enhance reading, writing, computing, communication, team work, hands-on experience, and critical thinking and will apply them to the information technology and STEM environments. Knowledge and skills in the proper use of analytical skills and application of IT concepts and standards are essential to prepare students for success in a virtual world. Critical thinking, information technology experience, and product development will enable participants to successfully perform and interact in a technology-driven society.

#### **Introduction to Nanotechnology (Year 4)**

#### **Topics in Problem Solving (All Years)**

- Students will demonstrate knowledge of formal problem solving techniques, both heuristic and algorithmic, including looking for patterns, developing lists and tables, writing equations, simplification, utilization and evaluation of research.
- Students will demonstrate the ability to utilize problem solving techniques as a method of inquiry and application, specifically to investigate and understand mathematical content, formulate problems, construct, analyze and test hypothesis, gather evidence, verify and interpret results, draw inferences, build arguments, and generalize solutions.
- Students will demonstrate the ability to generalize and extrapolate patterns of solutions and problem solving strategies.
- Students will demonstrate an understanding of how problem solving approaches, methods of investigating and reasoning can be applied to new situations and to multi-step, complex and non-routine problems.

- Students will demonstrate the application of problem solving techniques to specific mathematical concepts in algebra and geometry.
- Students will demonstrate an understanding of how problem solving and thinking can be represented, clarified, contrasted and/or consolidated through the use of mathematical symbols and language.
- Students will demonstrate an increased ability to reason mathematically, as well as increased flexibility in exploring mathematical solutions and ideas.
- Students will demonstrate knowledge of the importance of accurate documentation and clear, efficient, persuasive presentations.
- Students will demonstrate the ability to conduct library research, interviews, surveys, and field investigations, incorporating their problem solving and reasoning skills. Students will apply their course work to solving real world problems using an interdisciplinary approach in Year 4.

#### **Career Opportunities Awareness (All Years)**

- Students will demonstrate increased knowledge of the diversity of professions within the fields of mathematics, science, technology, and engineering.
- Students will demonstrate a basic understanding of the necessary steps, and the opportunities available to them, to pursue careers in mathematics, science, technology, and engineering.
- Students will demonstrate increased motivation to achieve academically in high school.
- Students will be able to explain the relationships between mathematics and the disciplines it serves (physical and life sciences, social sciences and humanities).
- Students will demonstrate understanding of the flexibility and usefulness of mathematics as applied to diverse aspects of everyday living.
- Students will demonstrate an understanding of the link between mathematics and continuous innovation in technology and computer science.
- Students will demonstrate knowledge of the college application process, as well as awareness of financial aid and scholarship opportunities.

#### **Research and Study (All Years)**

- Students will demonstrate self-awareness, organizational skills and initiative in planning, evaluating personal strengths and goals, and in completing projects and assignments including a personal journal.
- Students will develop a personal relationship with a Program Assistant Mentor, who will serve as role model, individual and small group tutor, and facilitator of personal growth and goal planning endeavors.

#### **Field Trips (All Years)**

- Students will gain hands-on experience and knowledge of the applications of science and mathematics in factories, business, entertainment centers and other environs.
- Students will gain a broader exposure and awareness of the impact of mathematics, science, engineering and technology on their everyday lives.

#### **Component Grade Breakdown**

Each component is worth a certain percentage to the final grade. The component breakdown consists of the following:

Year 1	Logic - 50%
	Engineering - 20%
	Problem Solving - 20%
	Presentation Journal - 10%
Year 2	Algebraic Structures - 40%
	Problem Solving - 25%
	Physics - 25%
	Presentation Journal - 10%
Year 3	Probability and Statistics - 30%
	Problem Solving - 30%
	Technical Writing - 30%
	Learning Log - 10%
Year 4	Advance Science & Engineering (Track=Nanotechnology/Water Science/Cybersecurity) - 50%
	Computer Science - 20%
	Problem Solving - 20%
	Speaker/Writing/Learning Log - 10%

<b>GRADE SCALE</b>	
Below is the scale used to calculate all final grades:	
100.00 - 99.00	A+ (Outstanding)
98.99 - 98.00	A+ (Honors)
97.99 - 93.00	A
92.99 - 85.00	B
84.99 - 75.00	C
74.99 - 69.50	D (Any student with a grade of 69.5 or greater has successfully completed the program.)
BELOW 69.50	F

## TEST TAKING TIPS

**The following are suggestions for test taking strategies:**

1. Be sure that you have all required testing materials for the exam. (Showing up for an exam late or without a pencil is a sure way to increase your stress.)
2. **Read all directions carefully.** Notice key words in the directions that indicate how to record your answers.
3. Use your time wisely. Do a quick preview of the test to determine the type and number of questions to be answered. Notice where you will start on the test. Check yourself at 15 minute intervals to see if you are progressing at an acceptable rate.
4. You may have problems remembering answers to questions from time to time. If you find yourself blocking, move on to the next question.
5. Ask for help in interpreting test questions that you do not understand.
6. Be aware of any negative statements you are telling yourself about the test. Such statements as, "I'm failing, I didn't study for this, or this test is too hard for me," increases anxiety.
7. Worry only about yourself. Do not be concerned with what other students are doing. (This is another sure way to increase anxiety by telling yourself that you are the only one having trouble.)
8. As a general rule, answer the easy questions first.

## TESTS INVOLVING PROBLEM SOLVING

1. Use the technique of budgeting your time.
2. Work the easiest problems first.
3. Write down the formulas, equations, and rules before you begin working on the test.
4. Check your answers when time permits. Check for addition and multiplication errors by reversing numbers whenever possible.
5. Show all your work; label your answers.

## **OBJECTIVE EXAMS**

1. Answer the questions in order.
2. Put check marks by the questions that are doubtful, and come back to them later.
3. Read the questions carefully. Be careful of questions containing negative words such as "not, no, least," etc. (This could cause you to misinterpret the question.)
5. Pay attention to wording such as, "all, most, some, none; always, usually, seldom, never; best, worst; highest, lowest; smallest, largest." (It might make a difference in which answer selection you make.)
5. Watch for limiting phrases in true-false statements. Names, dates, places, are often used as the key to make a statement false.
6. In multiple choice questions, look for grammatical inconsistency between the stem and response. In most cases, the alternative is not correct if you find an inconsistency.
7. Change your answers only if you are sure you made an error. Often your first intuition is correct.

## **ESSAY EXAMS**

1. Read all questions first. Write down the key points that occur to you as you read the questions.
2. Plan the amount of time you can spend on each question based on the difficulty and the amount of points to be received.
3. Answer the easiest questions first.
4. Underline key words in the questions that give you a clue about how to answer. Words such as, "define, compare, contrast, and explain," require different ways of answering.
5. Answer all questions. If you don't know the precise answer, try to write a closely related one.
6. Be neat and legible.
7. Leave enough space between answers to be able to add information you may recall while working on other items.





## ACKNOWLEDGEMENT OF OPTION FOR ELECTRONIC DISTRIBUTION OF THE STUDENT AND PARENT HANDBOOK

### 2016 UT Arlington PREP

In our continued efforts to be as efficient as possible, the UT Arlington PREP website will now be the primary source for access to the Student and Parent Handbook. Families who do not have Internet Access or prefer a hard copy can receive one at their site campus on request. Please complete the requested information below and return with the Acceptance Packet.

My student and I have been offered the option to receive a paper copy of the UT Arlington PREP Student and Parent Handbook or to electronically access it at [www.uta.edu/engineering/community/summer/TexPREP.php](http://www.uta.edu/engineering/community/summer/TexPREP.php). I understand that the handbook contains information that my child and I may need during the summer.

I am/we are responsible for reading, understanding and abiding the rules, expectations, and other information contained in this publication. Furthermore, we acknowledge that we have read and understood the contents of the handbook and have had an opportunity to ask questions.

I have chosen to:

\_\_\_\_ Accept responsibility to access the *Student and Parent Handbook* by visiting the website above on **Monday, June 13, 2016**.

\_\_\_\_ Receive a paper copy of the *Student and Parent Handbook* on the first day of the program **Monday, June 13, 2016**.

\_\_\_\_\_  
Participant's Name (printed)

\_\_\_\_\_  
PREP Site

\_\_\_\_\_  
Participant's Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Parent's/Guardian's Signature

\_\_\_\_\_  
Date