

FISCAL YEAR: 2014
NATIONAL SUMMER TRANSPORTATION INSTITUTE PROGRAM
STATEMENT OF WORK

TRANSMITTAL SHEET

HOST SITE (COLLEGE/UNIVERSITY):
CAL STATE LA UNIVERSITY AUXILIARY SERVICES, INC (UAS)

ADDRESS:
5151 STATE UNIVERSITY DR. GE 314 LOS ANGELES, CA 90032

CONTACT REPRESENTATIVES

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FISCAL YEAR: 2014

**NATIONAL SUMMER TRANSPORTATION INSTITUTE PROGRAM
STATEMENT OF WORK APPLICATION**

SECTION A: PROGRAM INFORMATION

Host Site (Name):	Cal State LA University Auxiliary Services, Inc. (UAS)		
State Abbreviation:	CA		Zip:90032
FHWA Funding Requested:	46,000		
Is this a new STI? Y/N	No		
Number of years in existence:	14 years		
Type of In-Kind Contributions:	N/A		Monetary \$12,854
	Other (Provide brief description): Difference in Indirect Costs		
Length of Program in weeks:	2 Weeks	Program Dates:	July 7 th – July 18 th
Congressional District Number(s):	32		
Anticipated Number of Students:	45		
Select Type of Program:	Residential		Non-Residential X
Select Grade Levels:	Middle School (grades 7-9)		High School (grades 9-12) X
Priority (if applicable – rank 1-5)			

Each Summer Transportation Institute (STI) Host Site is responsible for the following:

- 1. Financial Reimbursement:** Submit all invoices in a timely manner. Note: Expenses on invoices should reflect only the expenses listed in the approved budget.
- 2. Section 508 Standards of the Rehabilitation Act:** Ensure that their procurement of electronic and information technology takes into account the needs of all end users – including members of the public with disabilities who are seeking information or services, have access to and use of information and data that is comparable to that provided to others.
- 3. Annual Report:** Complete the online NSTI Questionnaire via a web link that is provided by HCR at the end of the program. Although this fulfills the annual 10-page report requirement, Division Offices reserve the right to request an additional report that includes improvement results of activities associated with the STI to its State transportation agency. **PLEASE DO NOT SEND COPIES TO HCR.**
- 4. Program Evaluations:** Conduct weekly evaluations and overall participant’s program evaluations at the end of the STI program.

Section B: Program Overview.

Cal State LA University Auxiliary Services, Inc (UAS) is pleased to host the 15th annual non-residential Summer Transportation Institute (STI) program between July 7th – 18, 2014 with a total of 45 high school student participants. We have extensive experience and capabilities relevant to the mission of the STI program, to recruit a diverse group of secondary school students into the transportation field and create an awareness of the attractive career choices and opportunities that exist in the transportation industry.

The College of Engineering, Computer Science, and Technology at the California State University of Los Angeles has partnered with the Federal Aviation Administration (FAA) in order to offer the STI students the Aviation Career Education (ACE) Academy Program. The goals of this partnership are to pursue:

- Academic achievement
- Dropout prevention
- Transportation Career education with a science, technology, engineering, and mathematics (STEM) influence
- Discipline and drug prevention
- Enrichment of cultural experiences of the local youth

The Aviation Career Education (ACE) Academy Program is:

- A fun, interactive aviation summer camp geared towards high school students who are interested in aviation and aerospace.
- An adventure where campers use flight simulators, go on field trips to aviation sites, and fly in an airplane
- An exciting opportunity for campers to learn about planning a flight, aviation history, the physics of flight, and the design and maintenance of aircraft.

The objectives of the Academy are:

- To expose students to aerospace/aviation curriculum with emphasis upon excellence in the fields of science, math, and technology.
- To engage students in subject areas and the importance of continued education to become eligible for future job positions.
- To develop an awareness of career opportunities in aerospace/aviation and the transportation industry.
- To educate students to the requirements of becoming certified pilots and air traffic controllers and the importance of making decisions now that will influence their ability to enter into these fields later.

Beside participation of students in ACE program for one week. The STI program presents academic programs that introduce students to a wide range of transportation activities in land, water, and pipeline transportation. The institute provides the students a broad range of intermodal transportation experiences with focuses on highway transportation, environmental impact of transportation system, alternative fuel energy for transportation, and safety and security. The students are introduced to the alternative transportation energy options in the future

through hands-on projects such as constructing and testing Solar Powered vehicles and demonstration of an electric car. They participate in a number of competitive group activities such as constructing and testing Pop Bottle Rockets, and Bridges. Presentations by professionals and field trips to many transportation facilities supplement these activities. The students also participate in many enhancement and enrichment workshops such as preparatory sessions in math, physics, writing, computer, study, leadership skills, college preparation, and workforce readiness. All activities are educational, but fun. Fun activities include pizza parties, basketball, and swimming.

Program Objectives

The Institute is designed to stimulate and sustain interest in transportation for the secondary school students in order to increase the numbers who choose a career in the transportation industry. The CSLA-STI designs the following behavioral objectives to be achieved by student participants:

1. Explore career opportunities in the transportation industry;

Students become aware of many career opportunities that exist in transportation field via The ACE program and field trips to transportation agencies such as MTA and LADOT, presentations by professional and hands-on transportation projects activities.

2. Comprehend the past, present, and future direction of transportation;

This objective is accomplished by class presentations on history of four major modes of transportation (land, water, rail, and air) and Intelligent Transportation Systems (ITS) applications to transportation industry.

3. Investigate sources of energy and their environmental impact;

Faculty at CSLA lecture on sources of energy and their environmental impact during instruction to students on the design and construction of Solar, Electric Powered, LNG Vehicles, and LED Lights.

4. Identify methods of moving people and cargo;

The students identify methods of moving people and cargo by being lectured on Alameda Corridor project for cargo movements, field trips to the city and county of Los Angeles Department of Transportation and Public Work, and attending several class presentations on various modes of transportation.

5. Identify users and providers of transportation systems;

Field trips to several transportation agencies, presentation by professionals and class projects improve the student understanding of users and providers of transportation systems.

6. Recognize the many devices and methods used to manage transportation systems;

Field trips to the Automated Surveillance and Control (ATSAC) at LADOT, City and County of Los Angeles Sign Shops, and the City of Los Angeles Street Lighting Division demonstrate to students some of the devices and methods used to manage transportation systems.

7. Explore the areas of transportation safety;

LA Metro controllers, ATSAC at LADOT and engineers at the City and County of Los Angeles demonstrate to students the importance of transportation safety and security. The students will also be lectured and viewed an audio-visual module on the issue of transportation safety and security.

8. Recognize the linkages between transportation systems;

Transportation engineers at the City and County of Los Angeles demonstrate intermodalism in Los Angeles to the STI participants. The LADOT engineers present to students the linkage of modes of transportation for moving cargos. The students learn how cargos move from ships in Ports of LA and Long Beach to Trucks and rails and travel to East Coast.

9. Explore the importance of construction engineering issues in transportation;

Demonstration of the 2.4 billion dollars construction of Alameda Corridor project and visitation of a bridge construction site explore the importance of construction engineering issues. Faculty at CSLA also instruct students on the design and construction of Solar Power Vehicle, Pop Bottle Rocket, and bridge projects.

10. Study the applications of current research technology to the transportation industry.

The students will learn the applications of current research technology to the transportation industry through field trips to LADOT ATSAC center, Caltrans, and other field trips. The students will also lecture on current research in ITS and its applications to the transportation industry.

The CSLA Summer Transportation institute is developed through the cooperative effort of California State University, Los Angeles, Federal Aviation and Administration (FAA) and several other public and private agencies listed in Tables C and D. In the past fourteen years the orientation and closing programs was always well attended by the participants and their parents, faculty, university staff, and Caltrans, FAA, and FHWA staff. CSLA/UAS has always accomplished its goal of meeting the STI objectives to stimulate transportation career interest in secondary school students. The university has a continuing commitment to provide quality educational opportunities and seeks to expand its efforts to assist young students.

Section C: Program Administration

1. Recruitment and Student Selection Procedures

Students enrolled in public and private secondary schools in the state will be invited to participate in the 2014 Summer Transportation Institute. Building on existing relationships between CSLA/UAS, MESA and MEP programs, and with neighboring high schools, we will identify potential high school student candidates for entry to the program and to the field. Specific activities will include informing specific teachers and students, campus presentations, student applications, and interviews

The STI selection criteria emphasize demonstrated potential for success (desire, interest, dedication, and career goals), in addition to a record of academic achievement. As broad a pool

as possible of women and students of underrepresented groups will be accepted. Each applicant will require submitting a letter of intent. Two Letters of recommendation from instructors, counselors and others who know the applicant well will be of considerable weight in all cases. The STI project personnel will interview potentially qualified students and ranked applicants for admission. Offers of admission to the program will be made to students according to this ranking. The specific criteria include:

1. Students must be enrolled in the ninth, tenth or eleventh grade.
2. Students must provide a list of two personal references that can attest to the character and academic ability of the prospective student.
3. As a part of the workshop each prospective student will submit a personal statement that explains the student's interest in transportation and other pertinent information
4. A minimum GPA of 2.0 will be required.
5. Students must have completed pre-algebra or be qualified for enrollment in pre-algebra for the following term.

Upon completion of the selection process, the project director, Dr. Hashemian will notify the successful applicants and provided them with detailed information about the Institute. Information provided in the notification/ acceptance package includes, 1) Notification Award 2) letter of confirmation 3) STI regulations, 4) Certificate of Health, 5) personal items and dress codes, 6) permission to tape or photograph. Dr. Hashemian also will notify applicants who will not be selected to participate in the program.

2. Staffing Requirements

Dr. Hassan Hashemian will serve as program administrator and director .Dr. Hashemian has been a professor of civil engineering at the College of Engineering, Computer Science, and Technology at California State University Los Angeles for thirty-four years. Dr. Hashemian has extensive experience managing federal and state funded research and training programs and has demonstrated success of many outreach projects including the Summer Transportation Institute, Infrastructure Academy Transportation Program, Garrett Morgan Education Program, and the Dwight D. Eisenhower Fellowship program. Dr. Hashemian is a highly respected educator who has won a number of awards for research and teaching, including the Exemplary Achievement Awards from Secretary of Transportation, Mr. Rodney Slater in 1988, Institute of Transportation Engineers in 1995, and Federal Highway administration in 2001 and 2002. Dr. Hashemian will be responsible for the academic leadership of the program, including selection of instructors, academic assessments, and teaching. Over the past thirty-four years, Professor Hashemian has been teaching undergraduate and graduate courses in the area of transportation planning, design, and operation, goods movement, economics, CAD/GIS, probability and statistics, and environmental engineering. He received the Professor of the Year award from the Engineering, Computer Science, and Technology Student Council in 2006, 2007, and 2011. He is presently involved in several outreach and training projects and research activities in the field of transportation. He is a faculty advisor to the student chapter of Institute of Transportation Engineers (ITE) and director of the Eisenhower Fellowship program at CSULA. Dr. Hashemian received his Bachelor and Master degrees in Civil and Environmental Engineering from the University of Wisconsin, Madison and his Ph.D. in Civil/Transportation Engineering from the

University of California, Berkeley. Dr. Hashemian will dedicate his time for five units teaching assignment during the summer; the remainder of his position will be supported by general funding from California State University Los Angeles. For other staffs see attached Table A

3. Program Cost

See attached Table B

4. Intermodal Advisory Committee

The program has formed an Intermodal Advisory Committee with representatives from a broad spectrum of the transportation communities. The advisory Committee is reviewing program proposals, assisting with securing resources, (speakers, field trips, etc.), reviewing curriculum, providing technical assistance and assisting with planning. Members of the Intermodal Advisory Committee is listed in the attached Table C

5. Specific Named Partners

See attached Table D

6. Implementation Schedule

See attached Table E

7. Program Curriculum

The program curriculum is designed to include three programs: the academic program, the enhancement program, and the sport and recreation program. The following describes each of these programs.

Academic Program

The academic program allows students to participate in a series of academic and practical experiences designed to motivate them toward careers in the transportation industry. The program exposes students to the latest developments in land, air, water and space transportation and safety, securities, and career opportunities in each of these industries. Each week's activities include an introduction to a transportation mode and its role in society, activity-based presentations by professionals, field trips to transportation agencies and facilities, and exciting hands on projects. The following is a program overview.

Workshop Orientation: Day one is an orientation program of the STI. The project director welcomes the STI students and their parents to the program and introduces the program facilitators. He presents the purpose and history of the STI program and overview of the curriculum and schedule. He also explains the STI objectives and the student's responsibilities and expectations of the program. The parents are instructed about sign in and out location and time and supervision, insurance, illness, and injuries of students. At the conclusion of the program the STI applications and forms are reviewed for completeness.

Transportation Topics: The STI students are lectured on career paths in the transportation industry, major modes of transportation, safety and security in transportation, economical, environmental and social impacts of transportation systems, transportation energy requirements, Intelligent Transportation Systems, management of transportation systems, innovations in transportation, intermodalism, construction and highways engineering systems, and R&D issues. Professionals in the field trips and the ACE Academy lecture some of the above topics and the faculty and invited professionals lecture on the remaining topics at CSLA.

Student projects: During the two weeks of the STI program, “Hands On/Minds On” projects are developed to encourage students to learn about Land, Air, Sea, and Space modes of transportation. Also it is deemed important that students learn the steps involved with Research and Development mainly: Research, Theory, Design, Fabrication, Testing, and Analysis. Background research is performed to develop ideas and build enthusiasm. Theory is discussed including physical principles and mathematic equations to build a scientific relationship and to supplement project success. Design incorporates the use of the physical principles and mathematic equation relative to their particular design. Fabrication allows students to build what they design tying the “minds-on” activities with the “hands-on” activities reinforcing learning. Testing of the projects occur under a fixed set of conditions to determine effectiveness of the design. Analysis of the design occurs to see where and where not the project has met expectation and where improvements can be made. The research and design process is also discussed as not be linear but cyclic in nature as students analyzed their projects for improvement. The research and development process can be repeated to enhance their original design. The students also use the Internet to perform research to back their ideas and designs. The transportation technologies projects and activities include Highway Design and Earthwork, Highway Bridges, Pop Bottle Rocket, Solar Powered Vehicle, Solar thermal oven, Light Emitting Diode Flashlight Project, Solar Eagle III, Super Mileage activities, Paper Airplane, and Foil Floater.

Field trips: Several field trips to major transportation agencies and facilities will be made. These visits may include: the Automated Surveillance and Control (ATSAC) of LADOT, Bureau of Street Lighting (BSL) and Emergency Preparedness Center in the city of Los Angeles, the Hyperion water treatment plant (application of pipeline in transportation), the County of Los Angeles Department of Public Work and Transportation, the County of Los Angeles Sign and Signal Shops, the FAA Air Traffic Control Tower at Burbank Airport, Los Angeles Metro Surveillance and Control Station. During each visit to the above facilities, students will be lectured on career opportunities related to that industry. The students will also learn about FAA Engineering, Electronic Technician, FAA Civil Aviation Securities occupations, and highway construction jobs and careers.

Enhancement program:

The STI curriculum also includes enhancement and enrichment workshops. The program exposes students to methods and activities, which improve study habits and enhance academic achievement. The workshop curriculum includes: preparatory sessions in math, physics, writing, computer applications and programming, study skills, Library use, time management, vocabulary development, and college preparation such as preparation for Scholastic Aptitude Tests (SAT).

Pre-Diagnostic Tests & Pre-assessment: The students are tested for background information, learning levels in mathematics and communication skills.

Mathematics: The CSLA faculty and a student assistant will conduct a mathematics preparatory class for the STI students. The class is designed to sharpen the students’ math skills and more importantly to enhance their appreciation and enjoyment of solving math problems. The class begins with mathematics diagnostics test designed to assess each student’s math aptitude and identifies their strengths and weaknesses. Each student receives an individualized report of his/her scores and an analysis of their strengths and weaknesses in math topics. The class

highlights collaborative learning strategies wherein each student has to develop team approaches to solving math problems.

Writing and Communication Skills: Throughout the program several sessions will be devoted to writing, vocabulary development and communication skills. Power Point tool is used for their presentations.

Computer Activities: Throughout the program the faculty and student assistants introduce students to a variety of computer activities such as computer software tutorials, Internet search, AutoCAD, Solid Works.. Through Internet search students are introduced to many sites of public and private transportation agencies.

Academic Skills: Topics include test-taking skills, note-taking skills, time-management skills and study skills. These topics will be discussed throughout the four-week program.

Leadership Development Program: The Leadership Development Program is intended to develop student's communication skills, leadership, and intrinsic motivation. A three part developmental program, LDP assesses students' current levels in the following areas: communication, teambuilding, and community involvement. Activities will introduce students to the three skill areas, as well as provide opportunities for growth. Students will complete a post-assessment of the three skills to ensure that they have achieved competency in each. In addition, extracurricular activities play an important role in developing intrinsic motivation, building student relationships, and enabling student curiosity to emerge in a less structured environment.

Workforce Readiness : A structured series of workforce readiness activities will prepare students for applications to internships and jobs. Activities include workshops on professionalism, getting a job, developing a resume and cover letter, and interviewing. Interested students can apply to internship programs with agencies such as Caltrans as well as the City of Los Angeles Board of Public Works Student Internship program or the LA Department of Water and Power Student Worker program.

College Preparation: The STI students will receive college preparatory instruction in a series of classes that emphasized 1) how to choose which college is best for you, 2) how to apply to college, 3) how to prepare for the verbal SAT, 4) how to prepare for the Math SAT and 5) the engineering profession, 5) how to apply to college, financial aid and the advantages of choosing an transportation engineering career.

Sports and Recreation Program

Each week the students will spend two hours to play basketball, softball, or swim in the campus pool. The sport activity helps to re-enforce the community emphasis of the program, reduce some inhibitions and move the program forward with a greater degree of mutual support.

Student Assessment

Formative and authentic assessments with a summative work are all components of the student assessment for these project based courses.

Reflection and intervention is an essential part of the daily classroom instruction. The major tool for validating student understanding is the hands on contextual activities that the students need to perform in the applied activities. Periodic assessment will be complemented by reflection in student journals and continual student intervention through re-teaching, peer teaching and mentoring. Post assessment with detailed answer key and answer rationale document is tool to assist students in understanding the material and the standards. Addressing common misconceptions and beliefs related to each item students are struggling with using life connections will help students connect to the material in a personal manner. In addition, students will complete ongoing evaluation forms.

Closing and Awards Program

The Project Director, will plan and host a Closing/Awards Program at the conclusion of the STI. This program will be attended by students and their parents, college supporters of the program, and state and federal transportation agencies’ staff. A press release will be sent to Los Angeles Unified Media Services, and University Press announcing the graduates of the program. The Project Director will present an overview of the STI activities and accomplishments and congratulated the graduates of the program. He will award each STI graduate a certificate of completion and achievement for attending the program. In addition, faculty, staff, and supporters of the program will also receive certificates of Appreciation.

8. Follow-up Survey of Participants.

A follow-up survey of the STI students will be conducted by a program evaluator. The evaluator will develop a pre and post survey for the STI students. The survey will capture the student’s frame of mind upon entering the program and what the thoughts are after being involved in the program. In addition a follow-up survey for STI student graduating during their senior year in high school will be conducted. This survey is intended to measure the effectiveness of this program by finding the number of the STI graduates choosing academic studies or career in transportation related careers. The information regarding the above surveys will be available for submission to caltrans and FHWA:

PROGRAM CURRICULUM DEFINITIONS

The CSLA-STI program is offered to 45 high school students. The participants will attend two weeks at the Summer Transportation Institute. The two weeks consist of one week at the ACE academy and one week at CSLA. The following shows the schedule of the CSLA-STI program for the summer 2014.

	<u># of Students</u>	<u>ACE Academy Date/Location</u>	<u>CSLA</u>
Group #1	22	7/08/14-7/12/14 Riverside, CA	7/7/14 & 7/14/14-7/18/14
Group #2	23	7/12/14 & 7//15/14-7/18/14 Riverside, CA	7/7,14/14,&7/8/13-7/11/14

The following weekly calendar at CSLA conforms to the NSTI general curricula and includes all aspect of the transportation industry and its role in society.

BUDGET DEFINITIONS

The STI program’s total cost is allocated in line items and is shown in Table B.

SUMMER TRANSPORTATION INSTITUTE ACTIVITIES

Opening Session 8:30 – 9:00 Morning Session 9:00 – 12:00 Lunch 12:00 – 1:00 Afternoon Session 1:00 – 4:00

WEEK	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
July 7-11 July 14-18	July 7 & 14 Orientation and Administrative Activities; Cal State Tour: Libraries and Computer Labs; Career Opportunities in Transportation Industry, Alternative Energy in Transportation, Team Building,, Bridge Design Research	July 8 & 15 Leadership Development Workshop, Guide to Success Internet, homepage design , and Auto-CAD Workshop Bridge Research Design and Power Point Presentations Field trip to MTA	July 9 & 16 Introduction.to Land and Water Transportation, College Preparation; Verbal and Math SAT Workshop Academic Skills: test taking, note-taking & time; management skills Bridge Construction; Solar Powered Vehicle Research	July 10 & 17 Solar Powered Vehicle Research and Construction Pop Bottle rocket Construction Math & Writing Assignments; Occupational Safety workshop Field trip to ATSAC	July 11 & 18 Introduction to Civil Eng.; Career Opportunities in Construction Engineering; Testing and Evaluating The Bridge, Solar Car, and Pop-bottle Project s Closing Ceremony, Basketball, Swimming