

# 2024 Mineta Summer Transportation Institute at San José State University

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Alverina Eka Weinardy

## EXECUTIVE SUMMARY

The [Mineta Transportation Institute](#) (MTI) at [San José State University](#) (SJSU) conducted its eighteenth annual Mineta Summer Transportation Institute (MSTI) from July 8-26, 2024. MSTI was offered as a 3-week, Monday through Friday, 15-day non-residential program for high school students (9<sup>th</sup> through 12<sup>th</sup> grades) in San José, CA.

The program’s primary goal was to inform and inspire students to think critically about their futures and potential for careers in the transportation industry. The program comprised three main components: (1) a college-level course in environmental studies with 6,000 words writing minimum; (2) field trips; and (3) guest speakers.

A secondary goal of the program was to inspire the students to attend a college or university after high school. Historically, the program participants have been from schools with a high socioeconomically disadvantaged population and lacking college role models, meaning these students are in need of reinforcement of the importance of attending college. While MTI makes a concerted effort to promote the program among Title I schools in the Bay Area, expanded outreach efforts to other schools in the region have brought in more diverse cohorts in the past few years. This year’s program cohort included 22% of students who qualified for free or reduced lunch and 16% of first-generation students. However, many expressed anxiety about applying to colleges and about life after high school in general. By meeting on the SJSU campus and enrolling in a college-level course, the students became familiar with the campus and were able to actually experience attending college.

**Table 1. Recruitment Details**

	Number of Students
Number of applications received	55
Number of students selected for the program	35*
Number of students at the beginning of the program	34**
Number of students who completed the program	32
Number of students who did not pass	0
Number of students who qualify for free or reduced lunch at school	7
Number of first-generation students	5

\*One candidate did not enroll in the program, citing unforeseen circumstances preventing them from attending all sessions.

\*\*Two students dropped out after the start of the program, citing unforeseen circumstances preventing them from attending all sessions.

**Table 2. Enrollment by Grade Level (rounded to the highest tenth)**

Grade	Number of Students	% of total
9th	9	28
10th	17	53
11th	3	9
12th	3	9

**Table 3. Enrollment by Gender (rounded to the highest tenth)**

Gender	Number of Students	% of total
Male	23	72
Female	8	25
Non-binary	1	3

**Table 4. Enrollment by Race/Ethnicity (rounded to the highest tenth)**

Race/Ethnicity	Number of Students	% of total
Hispanic/Latinx	2	6
American Indian or Alaskan Native	0	0
Asian	2	69
Black or African-American	0	0
Native Hawaiian or other Pacific Islander	1	3
White	5	16
Multiple races	2	6

**Table 5. Enrollment by Learning Disability (rounded to the highest tenth)**

Learning Disability	Number of Students	% of total
Students with a learning disability	1	3

SJSU is a large, urban university in the heart of Silicon Valley. MSTI is structured in the style and format of a pre-college internship, emphasizing civic leadership and public policy, which are MTI's anchoring principles. Thus, a balance is sought between academic and experiential learning designed to motivate high school students to expand their horizons into the field of transportation and to be connected with the University in a meaningful way.

MTI used a competitive selection process based on a comprehensive application and recommendation letter to identify participants. A screening process was used for the 55 applications received, including the timeliness and completeness of the application package, and rubric for scoring the written essay and recommendation letter. Thirty-five candidates were admitted into the program, but only thirty-four accepted the offers and enrolled in the course. Considering the challenging environmental studies requirement of 6,000 words writing minimum, students and parents were required to sign a policy acknowledgement form to ensure their understanding that students' grades would be a permanent record on their SJSU transcript. Two students dropped out after the first two sessions, citing unforeseen circumstances preventing them from attending

the entire 3-week program, bringing the total number of participants to 32. Because of the SJSU enrollment process and possible technical issues in getting access to the online learning platform, while students were expected to submit assignments from Day One, the program coordinator did not reach out to the next runners-up on the waiting list.

**Table 6. Academic Background of Students\***

\*Note that students are able to take multiple science courses in one academic school year

STEM Course Completed	Number of Students	% of total
Algebra	7	22
Biology	17	53
Chemistry	16	50
Physics	10	31
Environmental Science	2	6
Other Math Courses	24	75
Other Science Courses	9	28

Focusing on field trips, visiting experts, a job skills component, and a college-level three-unit environmental education course, the Mineta Summer Transportation Institute is designed to be both academically challenging and fun. The 32 participants had the opportunity to earn three units of college credit at no cost to the student through SJSU in an introductory environmental studies class with a STEM and transportation emphasis taught by Professor Amy Petersen. The course explored the effects human activities have on the natural environment and our quality of life, the technical and social causes of environmental degradation, and also the need to reduce dependence on fossil fuels and toxic automobile emissions. Furthermore, the course helped students discover how their personal and career choices can help protect our living environment for current and future generations.

To augment the classroom lessons, students participated in eight field trips over the course of the 15 days of the program, where they were exposed to a wide range of careers in transportation and college-readiness experiences. Students learned about mass transit and the critical role transportation plays as the cornerstone of our economy and in the environment, particularly in Silicon Valley and the Bay Area. To access these sites, students used a range of transportation options, including walking, public transit, charter buses, and carpools. The program also included college-readiness workshops focusing on personal and professional improvements, such as budgeting, writing, and public speaking.

**Table 7. Academic Performance\***

\*Based on the students' ENVS 01 final grades.

Grade	Number of Students	% of total
A-minus - A-plus	29	91
B-minus - B-plus	2	6
C - C-plus	1	3

Overall, the program’s curriculum empowered students to embrace new experiences in some of the major transportation-related topics of the moment and allowed them to see firsthand “behind the scenes” operations of prominent Bay Area transportation sites and agencies such as the [Santa Clara Valley Transportation Authority](#) (VTA), [California High-Speed Rail Authority](#) (CAHSRA), and [Caltrain](#).

We are happy to note high satisfaction with the program among students, parents, and our partnering agencies this year. Combining elements from the program’s previous successes and adding new activities helped contribute to this year’s overall success. The anonymous program culmination survey that students were required to fill out has been instrumental in assessing previous years’ programming and, therefore, planning the following years’ calendar of activities. Additional changes were made this year due to new community partnerships, including with [Glydways](#) and [Contra Costa County Transportation Authority](#) (CCTA).

## PROGRAM OBJECTIVE

The program’s primary goal was to inform and inspire students to think critically about their futures and potential for careers in transportation and to increase the *knowledge* and *interest* of students in this field as a possible career choice. The 3-week curriculum is intended to stimulate students to take full advantage of the range of career opportunities in the transportation industry. In addition, MSTI is designed to provide an enjoyable learning experience for the students who would, in turn, share their experiences with their peers when they return to school.

To meet this goal, the program was designed to meet these three objectives:

1. Recruit 35 high-school students from diverse ethnic backgrounds and grade levels to participate in the program;
2. Expose participating students to various academic, professional, and practical experiences in the transportation field in the Bay Area;
3. Provide participating students with various science, technology, and employment skills.

MTI made a concerted effort to promote the program among Title 1 schools within the [East Side Union High School District](#) (ESUHSD) and [San José Unified School District](#) (SJSUD), and then the remaining schools in both districts as well as schools in other districts where previous participants came from. MTI also made additional recruitment efforts by working closely with the high school liaison and distributing the flyers to other school districts in the Bay Area and private schools near the SJSU campus. MTI also translated the flyer into Spanish and Vietnamese per several school counselors’ requests. The additional flyers helped broaden the reach to parents whose first language is not English.

MSTI students demonstrated enthusiasm and interest during the environmental science program portion and field trips. The SJSU class was challenging with its required textbook, lecture-style presentations, and 6,000 words writing minimum. The students were evaluated through daily written assignments, reading review quizzes, midterms, a final paper, and a presentation. Students

unprepared to work at the fast pace of the summer program would have difficulty passing the course. The program staff maintained close contact with the professor to ensure students made good progress throughout the course, bridging the students' expectations and the reality of a challenging university course so as not to discourage them from pursuing their college careers in the future.

A culminating survey was conducted using Google Forms after the program concluded. The survey was intended to assess various aspects of the total MSTI experience, including (1) guest speakers, (2) field trips, (3) staff, and (4) overall program effectiveness. MTI conducted these evaluations to determine success in measuring Objectives 2 and 3. (A complete discussion of the evaluation results is discussed in a separate section below.) A link to the survey was sent out to the students via email on the second to last day of the program. MTI staff also reserved 20 minutes of the last in-class activity for students to complete the survey using their personal phones/devices.

Overall, the evaluations confirmed the positive impact the students experienced. Participants reported a high level of satisfaction with MSTI activities, and they found that the program helped them better understand the field of transportation. After site visits, conversations with students indicated that they might explore job opportunities similar to those presented and that they recognized college education as important.

## MARKETING

During the participant recruitment period, ESUHSD and SJUSD were significant partners in supporting information sharing. Flyers with a link to the online application in English, Spanish, and Vietnamese were distributed to principals, vice-principals, and counselors in both districts. Furthermore, the flyer was also included in several school newsletters and email blasts, increasing students' and family members' awareness of the program. In addition, program information was posted on the MTI [website](#), social media sites, and in monthly newsletters.



Figure 1. Program Flyers in English, Spanish, and Vietnamese

New flyers, available in three languages, with significant visual and verbal appeal, were sent out via e-mail and posted to MTI's website. The English flyer was also included in several schools' newsletters, web pages, and social media posts. In addition, MTI staff also attended [sciencepalooza!](#) and the [Santa Clara County Environmental Literacy Summit](#) to engage K-12 students, parents, and teachers with transportation-related activities while distributing flyers to raise awareness about the program before and during the application period. The compilation videos and students' testimonials from previous years' MSTI were used to promote the program.

## APPLICATIONS

Applications were received from the following SJUSD schools:

- Abraham Lincoln High School
- Leland High School
- Pioneer High School
- Willow Glen High School

Applications were also received from the following ESUHSD schools:

- Calero High School
- Evergreen Valley High School
- Yerba Buena High School

Students attending schools outside of both districts also submitted applications to the program.

Those schools are listed below:

- Amador Valley High School (Pleasanton, CA)
- Branham High School (Campbell, CA)
- Christopher High School (Gilroy, CA)
- Cupertino High School (Fremont, CA)
- Fremont High School (Fremont, CA)
- George Washington High School (San Francisco, CA)



- Granada High School (Livermore, CA)
- Homestead High School (Fremont, CA)
- Irvington High School (Fremont, CA)
- Lincoln High School (Portland, OR)
- Lynbrook High School (Fremont, CA)
- Maria Carrillo High School (Santa Rosa, CA)
- Milpitas Middle College High School (Milpitas, CA)
- Mission San José High School (Fremont, CA)
- Monta Vista High School (Fremont, CA)
- Washington High School (Fremont, CA)
- Westmont High School (Campbell, CA)
- Wilcox High School (Santa Clara, CA)

MTI also received applications from students attending charter and private schools in the areas surrounding the SJSU campus:

- Bellarmine College Preparatory (San José, CA)
- Cristo Rey San José Jesuit High School (San José, CA)
- Khan Lab School (Mountain View, CA)
- Latino College Preparatory Academy (San José, CA)
- Mercy High School (Burlingame, CA)

### *Student Selection Process*

Interested students were required to complete an application and obtain a letter of recommendation from faculty. MTI staff, in partnership with high school teachers and counselors, distributed and emailed the recruitment flyer (see Figure 1) to students and parents who expressed interest. All applications were submitted online via Google Forms. While academic information was requested, other criteria were also applied to the pool of applicants. Sincere interest, recommendations from school faculty, and evidence of extracurricular interests were considered for acceptance to the program. The written essay was given the most significant weight in student selection. Since

college-level writing is expected in the class, students who did not submit a short essay with their application were not considered. Similarly, since time commitment and willingness to work hard were issues for some students in the past, resulting in early drop-outs from the program, a lack of a recommendation letter also disqualified a student from being considered a candidate.

## PARTNERS AND STAFF INFORMATION

### Partners and Sponsors



**Figure 2. MSTI Students at Henry Cowell State Park**

As part of the environmental studies component of the program, students took their lessons outdoors at Henry Cowell State Park in the Santa Cruz Mountains, led by the ENV5 01 course professor, Amy Petersen. Once at Henry Cowell, the lecturers led students on a non-strenuous hike, where they learned about the ecosystem the park seeks to conserve, including getting an interactive lecture about native plants they encountered and completing a picture scavenger hunt of these plants. In addition, students also received demonstrations and learned to use a variety of basic instruments and equipment to measure forests and trees, such as diameter tape, clinometer, and spherical crown densiometer.





**Figure 3. MSTI Students Visiting the Trainbox Area at Salesforce Transit Center**

For the past three years, MTI has worked closely with the California High-Speed Rail Authority (CAHSRA) staff and the Authority's Early Train Operator, DB Engineering & Consulting USA (DB), to provide MSTI cohorts with eye-opening field trips to their future sites, where they are exposed to the intricacies of a public infrastructure project and how it helps revitalize the local economies of California's megaregions. This year, students participated in a future train alignment trip to San Francisco. The trip began with a Caltrain ride from the historic San José Diridon Station, during which CAHSRA and DB staff guided students through the future high-speed rail alignment using interactive maps. Upon arrival in San Francisco, they learned about Caltrain electrification and its benefits for the Bay Area before transitioning to light rail for the next part of their journey.

The last site of the day was the Salesforce Transit Center, where they explored its public spaces and behind-the-scenes areas with the Transbay Joint Powers Authority. Highlights included the 5.4 acre rooftop park with its walking trails and greenery, the downstairs atrium, and the bus terminal. Students also toured the trainbox area, designed to accommodate future trains traveling directly from the Caltrain 4th and King station, gaining a comprehensive view of this transformative transit hub.





**Figure 4. (Left) Learning about Traffic Signal Control from SJDOT Staff; (Right) Touring VTA Light Rail Yard**

For an in-depth look at urban transportation systems, MTI partnered with the San José Department of Transportation (SJDOT) and the Santa Clara Valley Transportation Authority (VTA). SJDOT staff welcomed MSTI participants at City Hall, where they provided students with an overview of the departments' various divisions. SJDOT staff also led a walking tour of downtown San José to observe their Vision Zero projects, bike and pedestrian infrastructure, and traffic signal operations, including a visit to the Transportation Management Center. At VTA's light rail yard, participants toured the maintenance facility, met with operators and frontline workers who keep the system running everyday, and visited the operations control center, gaining a comprehensive view of transit system management.



**Figure 5. MSTI Participants at GoMentum Station**

The students were also exposed to cutting-edge tech and mobility innovations that can improve transportation safety and accessibility through a drone-flying session with Dr. Bo Yang from SJSU's Department of Urban & Regional Planning, a presentation on autonomous delivery robots and career pathways in transportation tech with Nuro, and a field trip to GoMentum Station and Bishop Ranch City Center. MTI's new partnerships with the Contra Costa Transportation Authority (CCTA) and Glydways enabled students to visit GoMentum Station, a testing site for autonomous and connected vehicles in Concord, CA, and learn about Glydways' San José Airport Connector project. Additionally, students learned about CCTA's autonomous paratransit pilot from partner May Mobility and experienced the autonomous shuttle pilot at Bishop Ranch City Center.

Last year's cohort highly rated two aviation lectures and activities and recommended offering the same ones in the future. Building on this success, MTI invited United Airlines and SJSU's Aviation and Technology Department to collaborate again. MTI welcomed Jeff Berry, a commercial pilot with United Airlines, back for a career presentation. As a guest lecturer, Berry shared his journey in aviation, then offered insights into the evolving pathways to becoming a pilot, the airline hiring process, and training programs. To augment this lecture, MTI staff worked with SJSU's Aviation and Technology lecturers and student assistants to provide an immersive experience in the Gerald Shreve Flight Simulator Lab, where students practiced map-reading skills and tried the flight simulator.

**Table 8. Summary of Financial Donations from Partners**

Partner & Action	Estimated Dollar Value
DB Engineering & Consulting USA (part of Deutsche Bahn AG) Sponsored the field trip from San José Diridon Station to San Francisco on Caltrain to experience the California high-speed rail future alignment and visit the Salesforce Transit Center. This event included train & light rail tickets, bus charter, lunch, snacks, and water service	\$5,000
HNTB Sponsored lunch.	\$1,000

## Program Staff

**Table 9. List of Program Staff**

Name	Position
Hilary Nixon, PhD	Deputy Executive Director, MTI
Alverina Weinardy	Director of Operations, MTI
Amy Petersen	Faculty, Department of Environmental Studies, SJSU
Nancy Urena Reid	MSTI High School Liaison, SJUSD, Abraham Lincoln High School
Katerina Earnest	Student Assistant, MTI
Minhvy Tran	Student Assistant, MTI

## PROGRAM CURRICULUM

9am-3pm**	Mon.	Tues.	Wed.	Thurs.	Fri.
<b>Week 1</b> Morning 9am-12pm**	<b>7/8</b> 1. Introductions 2. Textbook Distribution 3. Overview of Program 4. <u>Field trip: SJSU Campus Tour</u>	<b>7/9</b> Environmental studies lecture @ BBC 102	<b>7/10</b> Environmental studies lecture @ BBC 102	<b>7/11</b> Environmental studies lecture @ BBC 102	<b>7/12</b> <u>Field Trip: Henry Cowell Redwoods State Park</u>  (9.00-9.45am) Bus ride to Henry Cowell <i>Snacks will be provided. Students must wear closed-toe shoes appropriate for long walks on the trail.</i>
Lunch break 12pm-1pm**			**Students meet in front of BBC at 12:45pm.		Bring a picnic lunch. Students can bring frisbee or football for lunch entertainment.
Afternoon 1pm-3pm**	Environmental studies lecture @ BBC 102	GIS Presentation & Drone Flying Activity with Dr. Bo Yang (SJSU)	<u>(Engineering Building) Field Trip: Spartan Racing presentation &amp; shop tour</u>  <a href="https://www.sjsuformulasae.com/">https://www.sjsuformulasae.com/</a>	Guest Speaker: Jeff Berry (United Airlines)  STEM Activity with MTI	(2.00-2.45pm) Bus ride back to SJSU
<b>Week 2</b> Morning 9am-12pm**	<b>7/15</b> Environmental studies lecture @ BBC 102	<b>7/16</b> Environmental studies lecture @ BBC 102	<b>7/17 (8.30am-4.00pm)</b> <u>Field Trip: GoMentum &amp; Bishop Ranch AV Tour</u> (8.45-9.45am) Bus ride to GoMentum Station <i>Snacks will be provided. Students must wear closed-toe shoes.</i>	<b>7/18</b> Environmental studies lecture @ BBC 102	<b>7/19 (8.15am-5.15pm)</b> <u>Field Trip: California High-Speed Rail Alignment &amp; Salesforce Transit Center</u>  <b><i>Drop-off at SJ Diridon Station at 8.00am</i></b> (8.00-10.00am) Caltrain ride to SF <i>Snacks will be provided. Students must wear closed-toe shoes.</i>
Lunch break 12pm-1pm**	***Lunch will be provided at Student Union.		***Lunch will be provided		***Lunch will be provided
Afternoon 1pm-3pm**	Guest Speakers: HNTB activity hubs @ SU Meeting Room 2A & 2B (2 <sup>nd</sup> floor)	<u>Field Trip(s):</u> 1. <u>SJ Dept of Transportation @ City Hall</u> 2. <u>Transportation Incident Management Center (TiMC)</u>	(3.00-4.00pm) Bus ride back to SJ	College Readiness Workshops – AI in a Writer’s Toolbox  California High-Speed Rail Authority – Friday field trip overview	(3.15-5.15pm) Bus ride back to SJ  <b><i>Pick-up at Student Services Center, 60 S 9<sup>th</sup> Street.</i></b>



9am-3pm**	Mon.	Tues.	Wed.	Thurs.	Fri.
<b>Week 3</b> Morning 9am-12pm**	<b>7/22</b> Environmental studies lecture @ BBC 102	<b>7/23</b> Environmental studies lecture @ BBC 102	<b>7/24</b> Environmental studies lecture @ BBC 102	<b>7/25</b> Environmental studies lecture @ BBC 102	<b>7/26 (9.10am-2.30pm)</b>  <u>Field Trip: VTA Tour</u>  <b>Drop-off at VTA Light Rail Facility, 101 W Younger Ave, San Jose.</b>  <i>Students must wear closed-toe shoes.</i>
Lunch break 12pm-1pm**				<i>**Students meet in front of BBC at 12:45pm.</i>	<i>***Lunch will be provided</i>
Afternoon 1pm-3pm**	Guest Speaker: Andrea Mosqueda (Ardurra, ASCE San Jose) – “Civil Engineering Project Life Cycle”	College Readiness Workshops – Surviving on a Student Budget: Smart Spartan Spending  Guest Speaker: Haleema Bharoocha – “Social Impact & Advocacy in Transportation”	Guest Speaker: Katie Stevens – Nuro <a href="https://www.nuro.ai/">https://www.nuro.ai/</a>	<u>(Industrial Studies Building)</u>  <u>Field Trip: SJSU Aviation Dept. &amp; Gerald Shreve Simulation Lab</u>	(1.00-2.30pm) MSTI Graduation Celebration @ VTA  <b>Pick up at VTA Light Rail Facility, 101 W Younger Ave, San Jose.</b>

## PROGRAM COMPONENTS

Three distinct elements made up the MSTI curriculum, which are listed below:

### 1. Academic Component (SJSU Environmental Studies Course)

The academic component of the program focused on [ENVS 01, Introduction to Environmental Studies](#), taught by Professor Amy Petersen, an adjunct faculty member in the [Environmental Studies Department](#) at SJSU. The course met for a total of 11 sessions, or 32 hours of instruction, condensing a semester-worth of class into just three weeks. Assignments included daily reading review questions, daily article evaluation summary, two midterms, a research paper proposal, two drafts of the research paper, and a presentation on the student's paper. The 11 sessions were spread throughout the three weeks to accommodate the numerous field trips and guest speaker sessions. As much as possible, the lecture sessions were held in the morning to ensure students received three hours of instruction per day.

Students who completed the 32 hours of coursework, fulfilled the 6000 minimum written words and passed the course with a C- (70%) or better received three transferable general education units from San Jose State University. This year, the cohort did exceptionally well, with a 100% passing rate and 91% of the class achieving A-minus or higher.

Factors contributing to the outstanding success rate this year include: (1) the overall preparedness of the students to take a college-level course, (2) the ability to focus on only one class, (3) the pacing of the class, which allowed students' progress to be assessed while they were still able to recall the material, and (4) additional college-readiness workshops and activities planned for students to adapt to their course load. Participants could register as SJSU students about a month before the start date. While this was mainly driven by the need to obtain an SJSU ID card for classroom access, it also allowed students access to the Canvas learning platform, helping them familiarize themselves with the system. In addition, the students were introduced to the SJSU library system and the Writing Center to help them with their writing assignments. During MSTI, the students were not distracted by having to study for other classes as they would during the school year. They developed a camaraderie during the 3-hour intensive lectures and many more hours on transportation-related field trips, helping make the entire program an enjoyable learning experience.

### *College Readiness*

In addition to fostering an interest in careers in transportation, the MTI/SJSU MSTI program is designed to help students succeed in other areas, such as personal and professional development. College readiness is the theme of our practical enhancement component. MTI collaborated with several entities on campus to give workshops and tours to help students complete the program successfully and take charge of their personal development beyond MSTI. In the program's first week, Professor Petersen collaborated with the Environmental Studies librarian Peggy Cabrera from the [Martin Luther King, Jr. Library](#), in a unique public/university library partnership, to provide a workshop on how to conduct library research. Further into the program, tutors from the [Writing Center](#) provided a 10-15 minute "house call" to discuss their

services with the students and facilitated “Personal Statements for Applications,” “Un-Blurring Plagiarism and Paraphrasing,” and “Emailing Netiquette” [workshops](#).

SJSU’s [Peer Connections Program](#) also supported the MSTI program. Peer Connections staff are trained and nationally certified to teach learning skills to achieve academic excellence and empower students to understand and navigate academic material, as well as their holistic development. Students learned valuable tools and information to help them make informed decisions about their financial health during the “Surviving on a Student Budget: Smart Spartan Spending” workshop.

Last but not least, MTI Editor, Lisa Rose, conducted an online “Artificial Intelligence in a Writer’s Toolbox” to introduce students to using artificial intelligence (AI) and large language models (LLMs) in writing, including ethical dilemmas of using AI and LLMs (e.g., source bias, uncredited sources, etc.), user pitfalls (e.g., presenting inaccurate or generic information), and how to use these tools ethically and effectively (e.g., as an outlining or brainstorming tool—*not* as a replacement for human work and creativity).

## 2. Field Trips

This year’s cohort participated in nine field trips over the three-week MSTI period, as listed in Table 10. These excursions were designed to provide experiential learning opportunities by allowing students to engage directly with transportation professionals, from the frontline to the C-suite. Almost all of the field trips included career-related presentations that were meant to provide students with diverse perspectives. As a cornerstone of MSTI, these field trips enriched students’ learning experiences by balancing classroom instruction with exposure to industry settings. For many students, these visits offered their first interaction with industry experts or their first time experiencing the transportation modes, making them an impactful component of the program.

**Table 10. List of Field Trips, Mode of Transportation, and Topics**

Site	Mode of Transportation	Topics
1. SJSU Campus Tour	Walking	Tour of SJSU main campus with emphasis on facilities students will visit during the program and other places that enrich campus life
2. SJSU MLK Library & Writing Center	Walking	Academic research, literature review, reference citation
3. Spartan Racing shops (SJSU engineering building)	Walking	Tour of the Spartan Racing shop areas, competition race vehicles, electric vehicles
4. San José Department of Transportation  4a. 4th Street & San Fernando  4b. Traffic Management Center	Walking	Presentation and Q&A with employees in the transportation department  Bike & pedestrian infrastructure, active transportation, transportation planning, city planning, intelligent transportation systems
5. Henry Cowell State Park	Charter bus, walking	Environmental impact, conservation, harmonic balance of transportation and nature
6. GoMentum Station  6a. Bishop Ranch City Center	Charter bus, walking	Autonomous vehicles, autonomous shuttles, autonomous transit connector
7. California High-Speed Rail Alignment  7a. Caltrain San Francisco Station  7b. Salesforce Transit Center	Commuter rail, light rail, charter bus, walking	High-speed rail, public transit, surface transportation, station design, local economy
8. Department of Aviation & Gerald Shreve Simulation Lab	Walking	Aviation, physics, map reading, flight simulator, aviation career pathways
9. VTA's Light Rail Yard	Students were dropped off at VTA light rail yard, walking	Welcome remarks from VTA officials, tour of maintenance facilities and operations control center, closing ceremony with parents



Table 11a summarizes the students' evaluations of the field trips. Overall, students expressed high satisfaction with the field trips. They also expressed support for offering similar experiences in the future. In addition, many students noted that the field trips made them more likely to consider careers in transportation as seen in Table 11c.

**Table 11a. Summary of Student Evaluations of Transportation-Related Field Trips**

Site	Percentage of students who rated trip a 3 or better on a scale of 1-5	Percentage of students who recommend the trip for next year
1. Spartan Racing shops (SJSU engineering building)	97%	81%
2. San José Department of Transportation	100%	59%
2a. 4th Street & San Fernando	Spartan Racing shops (SJSU engineering building)	78%
2b. Transportation Management Center		
3. GoMentum Station	87%	67%
3a. Bishop Ranch City Center		
4. California High-Speed Rail Alignment	91%	62%
4a. Caltrain San Francisco Station	97%	72%
4b. Salesforce Transit Center	97%	91%
5. Department of Aviation & Gerald Shreve Simulation Lab	100%	87%
6. VTA's Light Rail Yard	94%	94%

**Table 11b. Summary of Students' Satisfaction of the MSTI Program**

	Percentage of affirmative student responses	Percentage of students who rated "Very Satisfied"
Overall Program Satisfaction	97%	44%

**Table 11c. Summary of Students' Interest in a Career in Transportation**

	Percentage of affirmative student responses	Percentage of students who rated "Strongly Agree" and "Agree"
"This program encouraged me to consider a career in transportation."	100%	72%

### 3. Guest Speakers

Throughout the program, students engaged with guest speakers with various expertise both during field trips and classroom visits at SJSU campus. At the field trips sites, speakers not only hosted students on behind-the-scenes tours, they also discussed their career and how they got to where they are today, as well as what their jobs are like and how their roles contribute to the transportation industry. In the classroom, guest speakers led interactive discussions and/or facilitated hands-on activities designed to align with their professional specialties. These interactions offered students a first-hand look at industry practices and innovations in real-world settings. Meanwhile, the activities provided students with opportunities to apply theoretical knowledge to practical scenarios, deepening their understanding of the topics of the day.

**Table 12a. List of Guest Speakers (in order of speaking appearance)**

Name/Title	Topic
Alverina Weinardy MTI Director of Operations, SJSU Alum	Opening remarks during orientation on the first day of the program. Welcomed students and gave an overview of the Mineta Transportation Institute. Also delivered remarks at MSTI graduation.
Peggy Cabrera, Subject Librarian, SJSU Library	Gave a workshop on conducting library research
Bo Yang, PhD Assistant Professor, Urban & Regional Planning, SJSU	Provided an overview of how autonomous drone mapping is applied in environmental science and transportation. Facilitated a drone-flying practice.
Spartan Racing team members & SJSU students  Presentation: 1. Robine van Veen 2. Harry Quackenboss (Advisor & SJSU alum)  Shop tour: 1. Vincent Avila 2. Ahmad Jaffar Barati 3. Jaskaran Sidhu	Provided overview and history of Spartan Racing, the Formula Student team at SJSU. Led tour of the team's shops and vehicle showcase.
Jeff Berry Airline Pilot, United Airlines	Gave a presentation about his career journey as a commercial pilot and overview of pathways to becoming a pilot, and airline hiring process and training programs
HNTB  Lacy Vong San José Group Director  Gandari Galindo Planner I  Adriana Reyes Martinez Engineer I  Mark Young Engineer I  Arlo Fischer Aviation Planner  Interns: Sophia Swenson Fona Ou Amelie Ngo Gabe Berry Brandon Ross	Provided overview of HNTB transportation projects, including in aviation and rail. Facilitated a career panel & speed mentoring.

Name/Title	Topic
<p>San José Department of Transportation</p> <p>John Ristow (Director)  Ramses Madou (Planning &amp; Policy team)  Lam Cruz (Safety/Vision Zero Program)  Kenneth Jung (Signal and Streetlight Operation)  Kyle Tanhueco (Traffic Signals)  Vu Dao (Vision Zero Quick-Build)  Ryan Smith (Bike and Emerging Mobility)  Eric Lee (Intelligent Transportation Systems)  Vanessa See (Signal Operations)  Thomas Merrill (Signal Operations)  Tan Tranngo (Signal Operations)</p>	<p>Gave an overview of the Department of Transportation and answered students' questions about transportation projects happening in the city. Also guided a "mini tour" along San Fernando and 4th Street to show traffic and bikeway improvements in real life. Facilitated tour of the Transportation Management Center.</p>
<p>Jack Hall  Engineering Manager, Contra Costa Transportation Authority (CCTA)</p>	<p>Facilitated tour of GoMentum Station &amp; rides on autonomous shuttles at Bishop Ranch.</p>
<p>Glydways</p> <p>Lynn Tao  Director of Marketing and Communications</p> <p>Giovanni Ribo  Infrastructure System Plann</p>	<p>Provided an overview of Glydways vehicle and the San José airport connector project.</p>
<p>Jens Huelsermann  Lead Rail Planning Advisor, DB Engineering &amp; Consulting USA</p>	<p>Provided overview of the California High Speed Rail project.</p>
<p>California High-Speed Rail Authority (CAHSRA)</p> <p>Alice Rodriguez  Deputy Director of External Affairs</p> <p>Rebecca Tabor  Northern California Engagement Manager</p> <p>Jean-Paul Torres  Northern California Senior Outreach Specialist</p>	<p>Coordinated California high-speed rail alignment field trip and Caltrain electrification presentation. Facilitated a behind-the-scenes tour of Salesforce Transit Center with Transbay Joint Power Authority.</p>
<p>Nuro</p> <p>Yara Dwidar, Lead Technical Program Manager, SJSU Alum  Katie Stevens, Head of Policy</p>	<p>Provided an overview of Nuro's delivery robot technology and career pathways in an autonomous vehicle company. Facilitated a group activity with a real-life problem related to launching a new technology in the transportation industry to help the students deepen their understanding of transportation issues.</p>
<p>SJSU Aviation &amp; Technology</p> <p>Gretchen Kelly  Lecturer; Airports Division Manager, San Mateo County</p> <p>Jayden Chow  Student Assistant</p>	<p>Welcomed students to the Gerald Shreve Simulation Lab and shared about her position as an airport manager. Gave an overview about SJSU's aviation program.</p> <p>Assisted students in using the flying simulators.</p>

Name/Title	Topic
VTA  Marina Chakmakjian Media Spokesperson	Welcomed students and introduced VTA General Manager. Facilitated the tour and closing ceremony at the light rail yard.
Derik Calhoun Chief Operating Officer	Gave opening remarks during the VTA field trip and answered students' questions about his career journey.
Amy Petersen Lecturer, Environmental Studies, SJSU	Gave closing remarks as the ENV5 01 lecturer during the graduation ceremony at VTA.

**Table 12b. Summary of Student Evaluations of Guest Speaker Sessions and Activities**

Guest Speaker/Activity	Percentage of students who rated trip a 3 or better on a scale of 1-5	Percentage of students who recommend the trip for next year
1. Drone presentation and flying practice with Dr. Bo Yang	97%	91%
2. Airline pilot careers presentation with Jeff Berry	100%	97%
3a. HNTB presentation and career panel	100%	62%
3b. HNTB aviation & rail activities	94%	75%
3c. HNTB speed mentoring	97%	69%
4. Civil engineering project life cycle lecture & activities with Andrea Mosqueda	91%	72%
5. Social impact & advocacy in transportation with Haleema Bharoocha	72%	50%
6. Nuro autonomous delivery robot presentation	97%	60%

**Table 12c. Summary of Student Evaluations of College-Readiness Workshops**

Guest Speaker/Activity	Percentage of students who rated workshops 3 or better on a scale of 1-5	Percentage of students who recommend the workshop for next year
1. Surviving on a Student Budget: Smart Spartan Spending	72%	53%
2. Artificial Intelligence in a Writer's Toolbox	66%	41%

**Table 12d. Summary of Students' Evaluation of the Hands-On Class Activities**

	Percentage of students who rated the class activities a 3 or better on a scale of 1-5
How do you feel about the hands-on activities the class offered?	91%



## Closing Ceremony



**Figure 7. MSTI Participants and MTI Staff at the Closing Ceremony**

Given the previous success of holding graduation in collaboration with the VTA field trip, the closing ceremony was once again held at a VTA facility. VTA continues to be a valuable partner in offering a comprehensive last field trip of the program and graciously provided an outdoor venue for the closing ceremony. Certificates of completion were handed to the participants by Nancy Reid (the program's High School Liaison) and Amy Petersen (ENVS instructor). Alverina Weinardy highlighted the program's events and the students' achievements. During the graduation ceremony, the students were asked to share their answers to the following questions:

1. What's your favorite field trip/activity and why?
2. What's the most impactful lesson you learned from this program?

Family members were particularly pleased to hear the combination of staff and students' remarks.

## Recommendations

Recommendations for any future programs include:

- A. Continue to promote the program early and supplement the traditional methods with the online marketing scheme so that the school districts can again include the information in their parent literature, school websites, parent and student emails, and school announcements.

- B. Continue to collaborate with school counselors and teachers in securing speaking opportunities to promote the program and demonstrate the application process.
- C. Continue to create a video of the program that integrates students' testimonials and also a special newsletter amplifying alumni successes to recruit students for the next year. This year's video and newsletter can be found online.
- D. Continue the 3-week format, avoiding Juneteenth and Independence Day holidays, which cause absenteeism. Also, avoid scheduling too close to the start of a new academic year, which reduces student interest.
- E. Emphasize the component of the program that comprises an undiluted college course with a significant amount of work compressed into a relatively brief time.
- F. Keep the class size to a maximum of 35 allowed for more personal interaction with staff and the instructor.
- G. Continue to coordinate field trips, workshops, and guest lectures as early as possible to ensure availability and diversity of experiences.
- H. Give parents/caregivers more opportunities to participate by asking them to volunteer or chaperone the field trips and identify any working in the transportation industry to attend as a guest speaker.

## **ADDITIONAL COMMENTS MADE BY STUDENTS ON THE FINAL STUDENT SURVEY**

The MSTI program provided a range of engaging and educational experiences for the students through hands-on activities to professional mentorship opportunities. On the program culmination survey, students were able to write additional comments for each component. Based on those comments, the following key themes were observed.

### **Interactive and Hands-On Activities**

Many of the participants highlighted the interactive activities as one of their favorite components. For example, students praised the "Drone for GIS" presentation and drone flying activity with Dr. Bo Yang for the expert knowledge and practical demonstrations they provided. Students also described their experience on the flight simulator at the Gerlad Shreve Simulation Lab as "fun and engaging." While some activities (e.g., such as the "Civil Engineering Project Life Cycle" lecture and activity) felt rushed, they appreciated the opportunity to directly apply learned concepts through a hands-on project.

## **Career Insights and Networking Opportunities**

MSTI's emphasis on various transportation career exposure was a recurring theme in the student comments. The Spartan Racing shop tour, the presentation by Jeff Berry of United Airlines, and the HNTB career panel and speed mentoring were particularly impactful. Students found the opportunity to connect in either one-on-one discussions or small group engagements to be valuable as they offered more in-depth insights into professional journey and career planning.

## **Field Trips and Real-World Applications**

The field trips that stood out the most were the California High-Speed Rail Alignment, Caltrain Electrification, and Salesforce Transit Center Tour and the visit to Henry Cowell Redwoods State Park. The opportunity to ride Caltrain from San José to San Francisco stood out as a highlight, with many participants expressing its practical relevance to their daily lives. The behind-the-scenes tour of the Salesforce Transit Center train box was also memorable to many students.

## **College Readiness Workshops**

Though not as memorable as the field trips, students appreciated the practical workshops such as "Surviving on a Student Budget" and "AI in a Writer's Toolbox." Some said that they learned helpful tips, while others felt that they already knew about the practical knowledge shared.

## **Overall Program Feedback and Suggestions**

Overall, students praised the program structure and content, with some describing it as "an absolutely amazing experience" and also transformative. However, some areas for improvement were brought up, such as communication about the environmental studies class's writing-intensive nature as well as a need for stricter policies on attentiveness during sessions. Additionally, students consistently suggested incorporating even more interactive elements, especially in smaller groups or one-on-one settings.

## **Conclusion**

MTI succeeded in delivering a multifaceted program that combines education, career exploration, and college readiness. Students completed the program with new knowledge, stronger professional aspirations, and a deeper understanding of the transportation industry. The MSTI program has the potential to inspire even greater engagement and self-development in future cohorts through continued improvements of its offerings based on participants' feedback.

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### About the Authors

Alverina Weinardy first joined MTI as a graduate student research assistant in 2017. Currently, she serves as MTI's Director of Operations. In this role, Alverina manages the institute's online presence through newsletters, social media campaigns, press releases, blogs, and web content creation. Alverina plays a vital role in the execution of MTI's workforce development programs and other public-facing events. She holds a Master of Urban and Regional Planning, with a focus on Affordable Housing and Community Development Finance, from San José State University.

This report can be accessed at  
<http://transweb.sjsu.edu/research/2476>



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