

NSF STEM Talent Expansion Program (STEP) Partnership of San Diego (SPSD) Summer Team Internships

Congratulations! You been offered and have accepted a position to be an intern in the NSF MESA Summer Team Internship Program. As part of your acceptance into the NSF MESA Summer Team Internship Program you will have separate requirements for your internship site and for the internship program. Your mentor will only have information regarding your specific responsibility as part of your assigned project and that specific company.

You may also have a separate paperwork process with the company you will have your educational experience with. Your mentor and other people that work at the company you are interning at may know nothing about this internship program, please feel free to talk about this team internship with others.

Your requirements for this internship include

- 100 minimum internship hours
- Attendance of workshops and presentations and completion of various paperwork
- 30 minutes a week of team collaboration
- Creation of a poster presentation
- Poster Presentation Reception

Some things to note about your internship include:

- **Personal Information**
 - As an intern in this program, some material in your application packet was submitted to various employers interested in hiring students this summer.
 - Your name, the company you intern at, your poster presentation and some photos will be posted on our website and reports will be shared with the general public.
 - Information sensitive in nature such as GPA, Citizenship, and evaluative information if shared with the general public, will not be attached to your name or identity.
- **Stipends** may be taxable
- **Rest & Lunch Breaks** and appropriate use of these should be discussed with your industry mentor
 - Interns are allowed a *paid* 10-15 minute rest period for each 4 hours worked, in middle of each work period.
 - Interns are allowed an *unpaid* lunch break of 30 minutes, after 5 hours, except when workday will be completed in 6 hours or less and there is mutual employer/employee consent to waive meal period. On-duty meal period counted as time worked should be discussed with your industry mentor.

- **Overtime** is *not* approved
 - Interns may not work over 8 hours/day.
 - Interns may not work over 40 hours/week.
 - Interns may not work over 6 consecutive days.

Please direct questions regarding your internship to:

Angeline V. Yang
Program Coordinator, STEM Talent Expansion Program (STEP) Partnership of San Diego (SPSD)
College of Engineering
San Diego State University - MEP
5500 Campanile Drive, E208
San Diego, CA 92182-1303
Phone: 619-594-2680
ayang@projects.sdsu.edu

**NSF/MESA STEP Partnership of San Diego (SPSD)
Summer Team Internship Program**

Internship Dates, Deadlines, and Directions

Weekly	30 minute Team Collaboration
Bi-weekly	Submit Timesheets
June 7, 2011	Pre-Evaluation Electronically Due by 9:00am ayang@projects.sdsu.edu
July 4, 2011	1 artifact from team meetings to ayang@projects.sdsu.edu (1 per team) by 9:00am
July 4, 2011	Electronic Poster Due to assigned MESA Director and ayang@projects.sdsu.edu (1 per team) by 9a
July 8, 2011	MESA Director Edited poster sent back to student
July 11, 2011	Edited Poster w/ MESA Director edits printed and emailed and sent to <u>each industry mentor</u> for approval and feedback (1 per intern) by 9a <ul style="list-style-type: none"> • Politely request for industry mentor feedback by July 18th
July 22, 2011	Final Electronic Poster (1 per team) due to Eric Pamintuan (epamintuan@projects.sdsu.edu) by 9a
August 2 th , 2011	Internship Luncheon and Poster Presentation 1:30p-3:30pm. You must be on site by 12:00pm to set-up your poster and check-in.
After 100 hours	Complete Post-Evaluation and Teammate Evaluation Form and email it to ayang@projects.sdsu.edu

INTERNSHIP EVALUATION FORM: To be completed **BEFORE** you begin your internship.

This is a confidential form that will not be shared with your mentor. Information will be used to continually improve internship opportunities for future students. If a mentor requests your evaluation, you will be contacted for permission to share this evaluation

WEEKLY MEETINGS: 30 minutes a week for team collaboration before or after internship, or during lunch (this can be a meeting in person, via phone, or via email).

Team Internships are an opportunity to develop skills that are invaluable in today's competitive market. Working in teams will give students an opportunity to collaborate with each other and



Introductions

Northrop Grumman is a Defense and Technology Company with an emphasis in the following business areas: Information & Services, Electronics, Aerospace, and Shipbuilding. One specific subdivision of these areas is Unmanned Systems located in Rancho Bernardo, CA.

Rancho Bernardo is home to the Integration, Engineering and Development of the following Unmanned Systems: FireScout, Targets, UCAS, and Global Hawk. Our area of emphasis included Logistics, Subsystems Engineering, and Design for the Global Hawk.

David Lampley
Electrical Engineering
San Diego State University
dlampley@cox.net

Stephen Romero
Aerospace Engineering
San Diego State University
romeros@rohan.sdsu.edu

*Block 20 Global Hawk.
Contains different
payload for its unique
mission.*



*Block 10 Global
Hawks parked on
runway ready for
mission*



Results

Romero:

- FSMT Database entry.
 - Data to reference in future.
- Look up component drawings.
 - Aided in solution to known problem.
- Update flight logs
 - Inputted location and hours for each aircraft.
- Manager of a retrofit.
 - Participated in a weekly briefing on status of retrofit.

Lampley

- Electrical Wiring & Coaxial Cable Design
- Deficiency Report

Conclusions

Learned Company values

- Q uality
 - C ustomer
 - L eadership
 - I ntegrity
 - P eople
 - S uppliers
 - "Fill the Void"
- Ian Ziskin

Global Hawk Fast Facts

- Global Hawk is a High Altitude Long Endurance (HALE) Unmanned Aerial Vehicle (UAV).
- Currently deployed in support of the Global War On Terrorism.
- In October 2007, Air Force Global Hawks were used to monitor wildfires in Southern California.
- Conducts Intelligence, Surveillance, and Reconnaissance missions.
- NASA's Dryden Flight Research Center and Northrop Grumman have reached an agreement to use the Global Hawk in support of Earth Science Research.

Acknowledgements

Northrop Grumman, Vehicle Subsystems Engineering, Managers, and Operations Support Center

require less direction from company mentors. Teams benefit students because it can build a support system, give students additional resources to get questions answered, and can create additional venues to discuss and share ideas.

Discussion Topics

Getting to know each other	Do something fun, have lunch, etc. Talk about yourself, where you are from, your major, why you chose your major, what you want to do after you graduate, your goals, hobbies, things you like to do in your spare time, etc.
Learning about your teammates' projects	Discuss projects, responsibilities, site environment, things that excite you, what you are learning, challenges, things you think can be improved, what you want to learn, what you want to get out of your internship, why you wanted to do an internship, etc. (discuss both challenges and successes)
Create a poster presentation	The development of the poster presentation is a collaborative effort. Make use of these meeting times to complete an electronic file for a 3ft high x 4ft long Poster Presentation. Since you may be working on different projects, or with different mentors and/or staff, you may want to choose a theme that ties your work together. This will help make your presentations cohesive

You will need to provide at least one artifact from your weekly meetings. This can be in the form of:

1. Notes from an in-person meeting
2. Notes from a phone conversation
3. Print out of an email conversation
4. A blog conversation/facebook conversation, etc.

TIMECARD (or mentor's time card): Due Bi-Weekly to Eric Pamintuan at SDSU, Dr. Bakhiet at SWC, and Rafael Alvarez at City College. Please CC any electronic copies to Internship Program Coordinator, Angeline Yang at ayang@projects.sdsu.edu. (See attached NSF MESA Student Time Card).

Each intern will complete a time card. The NSF MESA Student Time Card (or mentor's time card) must be completed with your hours, your signature, and your mentor's signature. You may type all information into the excel spreadsheet, except you and your mentor's signatures. These need to be original signatures. This time card should reflect the true hours you interned. They can be submitted bi-weekly, after you've completed interning each pay period.

If your mentor has a timecard they are asking you to fill out, you can use your mentor's time card in place of the NSF MESA Student Time Card, as long as it lets us know the hours you interned, and there is a place for you and your mentor's signature.

This timecard can be directly dropped off to your MESA Center. Faxed copies will only be accepted if they are copies of your mentor's timecards. Original signatures and copies are required for your NSF MESA Student time cards. If you choose to use your mentor's time card, it is OK to send a copy of the original.

- POSTER:** One member of each team will send an electronic file of a 3ft high x4 ft long group poster presentation. This should be sent to assigned MESA Director and to Angeline Yang ayang@projects.sdsu.edu.

This is a collaborative effort. There will be one poster per team.

Teams are composed by company. Your teammates include all interns working in the same company that is mentoring you or closely related field if there is only 1 student from a company.

Posters will include: **Introduction, Methods, Results, Conclusion (with reflection), and Acknowledgements.**

- POSTER DUE TO MENTOR FOR APPROVAL AND FEEDBACK:** Submit your poster to each mentor for approval. Let him/her know that this poster will be made public. Your poster should not have any confidential or information sensitive material on it. You must ask for approval to take and use photos, to use logos, and/or including industry names for your poster.
- PRINT POSTER:** Email final poster to Eric Pamintuan at epamintuan@projects.sdsu.edu.
- AFTER 100 INTERNSHIP HOURS IMMEDIATELY COMPLETE YOUR POST-EVALUATION AND TEAMMATE EVALUATION:** After you have completed 100 internship hours, please complete the post-evaluation part of the evaluation form you completed prior to your internship.
- PRESENTATION RECEPTION:** You will be expected to present your poster. This will be an opportunity to describe your experiences and project with industry and your fellow cohort. **You must be on site by 12:00pm to set-up your poster and check-in.**

Contact and Mailing Information:

Angeline V. Yang
Program Coordinator, STEM Talent Expansion Program (STEP) Partnership of San Diego (SPSD)
College of Engineering
San Diego State University - MEP
5500 Campanile Drive, E208
San Diego, CA 92182-1303
Phone: 619-594-2680
ayang@projects.sdsu.edu



Please complete the shaded portions of this evaluation before your Summer Team Internship begins and return the form to Angeline Yang. Following the completion of your internship, the form will be returned to you for completion of the non-shaded portions. Please again email the form to Angeline Yang ayang@projects.sdsu.edu.

*POST EVALUATION
4 SECTIONS*

Name: _____

Is this your first internship? (please circle one) Yes No

If no, where else did you have an internship? _____

Please describe the top three goals that you have for your Summer Team Internship experience.	Please rate the extent to which the corresponding goal was achieved. Circle only one number. (1=Not Achieved, 10 = Fully Achieved)
A. _____ _____	1 2 3 4 5 6 7 8 9 10
B. _____ _____	1 2 3 4 5 6 7 8 9 10
C. _____ _____	1 2 3 4 5 6 7 8 9 10

Please rate the following items both prior to (in the shaded area) and following (in the non-shaded area) your Summer Team Internship experience. (Please Note: 1=Very Low, 10=Very High)

1. Confidence in professional settings	
1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10
2. Interest in the internship field	
1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10
3. Level of hands-on experience that you currently possess	
1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10
4. Ability to function well on a team	
1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10

The following questions are to be completed AFTER the completion of your Summer Team Internship. Please circle only one answer for each question.

5. Overall, how well did the Summer Team Internship meet your expectations?	Below my expectations	Met my expectations	Exceeded my Expectations
6. Do you think you are better prepared for careers in industry than you were prior to this experience?	No. I do not feel better prepared	I feel about the same as I did	Yes, it has better prepared me
7. Do you think that this internship was meaningful to you in your pursuit of your career goals?	No. it was not meaningful	Yes, it was meaningful	

Please use the reverse side of this form to expand on any of your answers to the above questions or for additional comments. Please include the date and question that you are referring to.

1

2

3

4

Poster Presentation Information

Last updated June 23, 2011

<http://alliance.sdccmesa.com/students/summer-team-internship/poster-presentations>

POSTER PRESENTATIONS:

All interns in the NSF MESA Summer Team Internship Program are REQUIRED to complete a Team Poster Presentation and to present their poster as a team at an Annual Reception in August. Industry representatives, academic guests, and all interns will be invited to this reception.

Poster presentations will be an opportunity to create a cohesive visual of your experiences at a company. As a team, the poster **MUST** look professional and cohesive.

Students will need to be creative in thinking about themes to help accomplish this goal.

POSTER PRESENTATION Submission Instructions:

Students will submit 1 electronic poster per team to Angeline Yang (ayang@projects.sdsu.edu) and assigned MESA Director for feedback and review. Posters that are not presentable/professional will not be printed in color.

Students will then be given an electronic copy of their poster with feedback, edits, and suggestions from the MESA Center Directors. Students must edit their posters then submit the edited copy of the team poster to *each* industry mentor(s) for review and approval.

After *each* industry mentor approves poster, 1 final poster per team may be submitted to Eric Pamintuan (epamintuan@projects.sdsu.edu)

POSTER PRESENTATION INSTRUCTIONS:

All interns will collaborate to create 1 3ft high by 4 ft long cohesive poster per team. Student may use any program. Typically, students use “power point” in Microsoft. Students will need to be creative in creating a poster that ties his/her experiences together under the headings:

- Introduction
- Methods
- Results
- Conclusion
- Acknowledgements

Please feel free to add graphics. **Interns MUST get his/her mentor’s permission to include graphics from the jobsite, project, etc.**

During the actual presentation of posters, students will give a general overview of the company and internship. Students can then talk specifically about their experience, what they learned, and how they hope to apply this to their learning and another job.

If students interned at different companies or different projects they try should come up with talking points to show cohesion. This can mean talking about the team component, collaboration, being a support system to each other, and similar and different ways students handled challenges and successes.

POSTER INFORMATION:

Information to add at the top of the poster: Name, Email Address, Campus, and Major

Please include your campus information at the top portion of team posters. Only add the grant number(s) for your campus:

City:	NSF Grant # DUE0653291
SDSU:	NSF Grant # DUE0653277
SWC:	NSF Grant # DUE0653234

SPSD Icon: Students have permission to use the SPSP Logo. It will be sent via email.

Company Logo: Students **MUST get permission** from his/her mentor to use their company's logo.

The following documents are helpful aids to assist students on their posters/poster presentations for the annual NSF/MESA Summer Team Internship program.

- [Effective Poster Presentations](#)
- [Summer Team Internship Poster Presentation Workshop](#)

POSTER TEMPLATES:

- [Poster – Landscape Template \(36" x 48"\)](#)
- [Poster – Samples of Scientific Designs](#)

*In Microsoft PowerPoint, zoom up to 400% to have a general idea of how your presentation will look like on a blown up poster for the reception.

POSTER GALLERIES:

- [1st Annual MESA/NSF Summer Team Internship – Poster presentation gallery \(August 2008\)](#)
- [2nd Annual MESA/NSF Summer Team Internship – Poster presentation gallery \(August 2009\)](#)
- [3rd Annual MESA/NSF Summer Team Internship – Poster presentation gallery \(August 2010\)](#)



Poster title goes here, containing strictly only the essential number of words



Author's Name Goes Here ♦ Author's Major Goes Here ♦ Author's Email Address Goes Here
Author's Name Goes Here ♦ Author's Major Goes Here ♦ Author's Email Address Goes Here

Introduction

Please use this template as a guide. This formatting is on powerpoint. You may use any program to create your poster.

Make sure your template is 36 inch Height x 48 inch Length. This file is already in the correct template size.

Remember to use your creativity to set your poster apart from the other students.

How to use this Poster Template

Simply highlight this text and replace it by typing in your own text, or copy and paste your text from a MS Word document or a PowerPoint slide presentation.

The sub-title text boxes can be moved up or down depending on how big or small your 'Introduction', 'Aim', 'Method', 'Results' and 'Conclusion' are.

The title text / font size should be around 40 points. Arial, Helvetica or equivalent. (Keep all title font sizes the same size throughout the poster).

The body text / font size should be between 24 and 32 points. Arial, Helvetica or equivalent. (Keep all text font sizes the same throughout the poster).

The color of the text, title and poster background can be changed to the color of your choice.

Aim/Purpose of Goal

Include

NSF Grant # s for the campuses of each teammate

City: NSF Grant # DUE0653291
SDSU: NSF Grant # DUE0653277
SWC: NSF Grant # DUE0653234

SPSD Logo

Photos of yourself in action (remember to get supervisor approval)

Method

Consider the Importance of Confidentiality

Remember to discuss whether certain equipment, techniques, locations, people, or anything else should be omitted from your poster. If necessary, think of a creative way to discuss what you are doing, without naming what you are doing.



Captions to be set in Times or Times New Roman or equivalent, Italic, between 18 and 24 points. Left aligned (if it refers to a figure on its left. Caption starts at the top edge of the picture (graph or photo).

Captions should describe what the item is, what the subject is doing.

Example:

Mariela Medina and Herzy Enriquez doing a site visit at the City of Oceanside new facility construction



Captions to be set in Times or Times New Roman or equivalent, Italic, 18 to 24 points, to the length of the column in case a figure takes more than 2/3 of column width.

Results

Tips for Making a Successful Poster

- Simplify everything, avoid data overkill.
- Headings of more than 6 words should be in upper and lower case, not all capitals.
- Never do whole sentences in capitals or underline to stress your point, use **bold** characters instead.
- When laying out your poster leave breathing space around you text. Don't overcrowd your poster.
- Try using photographs or coloured graphs. Avoid long numerical tables.
- Spell check and get someone else to proof-read.
- Title font sizes should all be the same throughout the poster
- Text font sizes should be the same throughout the poster



Left, Alberto Yaquez at San Diego Coastkeeper diluting samples for coliform & enterococcus testing



Captions to be set in Times or Times New Roman or equivalent, Italic, 18 to 24 points, to the length of the column in case a figure takes more than 2/3 of column width.

Importing / Inserting Files

Images such as photographs, graphs, diagrams, logos, etc. can be added to the poster.

To insert scanned images into your poster, go through the menus as follows: Insert / Picture / From File... then find the file on your computer, select it, and press OK.

The best type of image files to insert are JPEG or TIFF, JPEG is the preferred format.

Be aware of the image size you are importing. The average color photo (13 x 18cm at 180dpi) would be about 3Mb (1Mb for B/W greyscale). Call MIU if unsure.

Do not use images from the web.

Conclusion

Notes about Graphs

For simple graphs use MS Excel, or do the graph directly in PowerPoint.

Graphs done in a scientific graphing programs (eg. Sigma Plot, Prism, SPSS, Statistica) should be saved as JPEG or TIFF if possible.

Acknowledgements

Remember to enthusiastically thank your mentors, colleagues, the company that hosted you, your MESA director, the National Science Foundation and anyone that helped you with this professional development experience.



IMPROVING EFFICIENCY THROUGH DATABASE CREATION

Phillip J. Patague | Civil Engineering | Southwestern College | ppatague@gmail.com
Derek Pickern | Civil Engineering | City College | pickern1@gmail.com
Aleksandr Gostomelskiy | Civil Engineering | SDSU | alejandro_ruso_espanol@yahoo.com.mx



NSF Grant # DUE000777 (David P.)
NSF Grant # DUE000771 (Aleksandr G.)
NSF Grant # DUE0002024 (Phillip P.)

Introduction

Caltrans, the California Department of Transportation, is a state regulated bureaucracy that allocates taxpayer dollars to various transportation projects around the state. Our group reports to the District 11 headquarters, which deals with projects within the San Diego and Imperial Counties. Phillip assists the engineers in the Utilities Department, while Aleksandr and Derek help the CADD (Computer Aided Drafting and Design) Department; our group resides under the Design Division.

Caltrans employees utilize Microstation, computer aided drafting software, and Microsoft Access, database generating software, in coordination to create a comprehensive database of drawings. Derek and Aleksandr have assisted in the establishment of a database to cater to engineers working in the Microstation Design Suite. In addition, Phillip had aided in the development of the utilities database by updating drawings with proposed, existing, and abandoned utility lines. By creating these databases, Caltrans expects to improve efficiency within all departments.

Methods (CADD)

- The utilization of Bentley Microstation CAD software in order to refine the existing drafts of different typical elements of roadway details
- The removal of superfluous data and abstraction of specific design components
- The exporting of a copy of the file for the in-house plotting applications (iplot)
- Lastly, PDF's are created for simplified online viewing

Results (CADD)

- The creation of a database utilizing Microstation and PDF components to ease deployment of design elements as needed
- A system in which all Divisions may contribute and make amendments
- A database readily available to employees with intranet access

Methods (Utilities)

- The utilization of Microstation to update utility lines based on "as-built" drawings provided in-house (intrarelations) and other utility companies (interrelations), such as SDG&E, COX, AT&T, etc.
- The isolation of individual Master Utility drawings
 - Once isolated, each route is labeled with important features, including: stations, post-mile information, and street labels
- Nodes are assigned to each utility line
 - Established communication between Microstation and MS Access allow additional information to be attached to each node
 - In MS Access, employees review vital properties each utility line

Results (Utilities)

- The creation of a comprehensive utility database would resolve former hindrances
 - Before the proposal of this database, engineers would have to wait several months to see if their design conflicted with existing utilities
 - Without prior knowledge of utility layout, construction workers could potentially strike a utility line, resulting in further problems
 - Prior record of existing utilities could prevent the unnecessary realignment, incurring costs

Procedures (CADD)

Updating the Call Library (How/Process, match, reviewed photos)
 (1) Open older version of existing details
 (2) Clear up status
 (3) A compilation of completed details can be found on the intranet
 (4) Detail information updated in a database

Conclusions

In conclusion, we participated in tasks that could likely improve project efficiency. We gained a basic knowledge of Microstation as well as refining our Access skills. Furthermore, we helped in the development of databases that can be utilized by Civil Engineers within District 11 Headquarters. Having participated in meetings, we gained an understanding of infrastructure and function. Caltrans encourages the correlation between departments; in addition, we have witnessed collaborations between this company and others. Lastly, networking was an important part of our internship, meeting Professional Engineers, Project Engineers, and Managers of different departments. These connections enable us to pursue future jobs and relationships within the engineering community.

Acknowledgements

First, we would like to thank the National Science Foundation for funding all the internships; in addition, we would like to thank the MESA Alliance for providing this opportunity. Special thanks to: Abu-Bakr Al-Jabri, Ahn Hoang, Laura Moreno, and everyone at Caltrans for all of their guidance and mentorship.

Procedures (Utilities)

Updating the Utility Database (How/Process, match, reviewed photos)

- (1) From a flow file, relationships from the "records of As-Built"
- (2) Download the relationships into a single, readable drawing
- (3) Clear the drawing of extraneous information
- (4) Draw in utility lines from drawings both in-house and from third-party companies.

Isolation of Individual Routes
 (Above) All routes in District 11 are referenced, including post-mile, right-of-way, and alignment information.
 (Right) View of a completely isolated route, labeled with corresponding stations.