High School Project Description Book

Student Programs Office

Summer 2023

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![Los Alamos National Laboratory logo]

How to Use this Book

Thank you for your interest in an internship at Los Alamos National Laboratory (LANL). For more information about the internships, please visit the Student Programs Office (SPO) website. For any questions, feel free to email SPO at studentprograms@lanl.gov.

LANL's internship programs are very mentor driven. The purpose of this book is to share a description of what the 2023 high school summer interns worked on. Use this book to find a project that you may be interested in and reach out to the contact information that may be provided on the group's website (linked using the online version of this book).

This program is very mentor driven, so reaching out to people is the best way to get an internship, as well as applying to the high school specific job ad on the LANL careers website.

Non-Technical

Division: Accelerator Operations and Technology ([AOT-DO](AOT-DO)) **Group:** AOT-DO
Mentor: Peterson, William **Co-Mentor:** Naranjo, Miquella

Internship Project Description
The student will provide administrative and project support for the AOT-DO. The will be introduced to various business process associated with supporting operations of the division. They will also be introduced to various STEM aspects associated with AOT such as accelerator physics, RF engineering, mechanical engineering, etc. They will also be provided with opportunities to explore business operations support areas such as budget, purchasing, website development/maintenance, and safety/security.

Division: Acquisition Services Management (ASM-DO) **Group:** ASM-OPS
Mentor: Herrera, Sean **Co-Mentor:** Garcia, Pamela

Internship Project Description
Assist ASM Division with a variety of entry-level administrative and purchasing tasks. The duties will consist of (but not limited to) assisting with day-to-day purchasing duties (file administration, researching orders, collecting data, and verbal and written communication with colleagues).

Division: Analytics, Intellgence, and Technology (A-DO) **Group:** A-1
Mentor: Del Valle, Sara **Co-Mentor:** Moran, Kelly

Internship Project Description
The purpose of the student's appointment is to help with a literature review and summary analyses for a study on forecasting models around the globe. Our goal is to demonstrate the need for more modeling approaches for middle and low-income countries since the vast majority of epidemic models come from and are developed for high-income countries.

Division: Bioscience ([B-DO](B-DO)) **Group:** B-GEN
Mentor: Hovde, Blake **Co-Mentor:** Gleasner, Cheryl

Internship Project Description
The student will be programing an educational game on the economies of running a DNA sequencing lab. These training materials will be used as tools for domestic and international partner laboratories that train with LANL scientists on how to set up, manage, and run genomics laboratories. The student will work closely with their mentor to put ideas into practice through

game design and game programming, as well as provide a graphical user interface for the training to take place.

Division: Chemistry ([C-DO](#)) **Group:** C-NR
Mentor: Roybal, Danielle **Co-Mentor:** Roach, Jeffrey

Internship Project Description
The LANL InVitro Bioassay Program must have lab supplies in stock at all times in order to keep the group's program running. We cannot stop processing samples. Supplies are stored in transportainers that are on site. This project will include working with the staff and project manager to organize and inventory the supplies in these transportainers in order to prepare for a new Inventory Management System that is being created. Work will include being outdoors, some lifting, and computer data entry. Support on smaller administrative projects will also be included. This project will include project management, organization, and team work.

Division: Communications and External Affairs (CEA-DO) **Group:** CEA-MP
Mentor: Cooper, Charles **Co-Mentor:** Clayton, Brian

Internship Project Description
Photography as needed to proactively improve content in LANL Image Library, including updated photos of LANL skylines for news releases.

Division: Community Partnerships Office (CP-DO) **Group:** CP-CPO
Mentor: Leonard, Zachary **Co-Mentor:** Merker, Robert

Internship Project Description
Develop a working knowledge of the mission of the LANL Community Partnerships Office (CPO) and the educational work of the Math and Science Academy (MSA). Develop a general understanding and awareness of the work at LANL. Develop a working knowledge of best practices in mathematics education. Build relationships by networking with LANL professional staff, community leaders, education professionals, other LANL students, and K-8 northern New Mexico students. Develop skills in communication, collaboration, and coordination. Develop as a reflective practitioner. Complete all LANL required training. Meet weekly with Mentor to reflect on the week's activities, successes, and challenges (meeting duration, 15 - 30 min.). Develop MSA summer institute content and assist in the implementation of the summer program. Gain an understanding of the Laboratory's educational landscape. Provide administrative support to the MSA and CPO staff.

Division: Emergency Management (EM-DIVOFF) **Group:** EM-PREP
Mentor: Fresquez, Lance **Co-Mentor:** Grano, Paul

Internship Project Description
Take the lead on and work with the IF FOD Emergency Preparedness Coordinators to develop a drill plan for the Study Center's (TA-03-0207) annual evacuation drill. Project will consist of coordinating with Study Center staff, Fire Protection, and the IF Emergency Preparedness Coordinators to develop and execute the drill. A summary report will also be generated to document the drill. In addition, support IF/UI EPCs on executing Protective Action Drills/Emergency Drills and support the development of Building Emergency Procedures.

Division: Engineering Services (ES-DO) **Group:** ES-DO
Mentor: Walker, Denise **Co-Mentor:** Haver, Bryan

Internship Project Description
The student will gain knowledge of the engineering hiring/staffing processes while working with the Business Operation Group. They will provide day-to-day support to the Business Operation Group and excel their computer skills, time management, and communication skills.

Division: Enginerring Technology and Design (E-DO) **Group:** E-DO
Mentor: Morgan, Bryn **Co-Mentor:** Childers, Troy

Internship Project Description
Collecting data and data entry for Asset Management Asset Suites application, and helping program managers with daily activities in support of E-DO.

Division: General Counsel (GC-DO) **Group:** GC-LEL
Mentor: Safarik, Tamara **Co-Mentor:** Lapis, Julia

Internship Project Description
Student will work closely with all members of GC-LEL to obtain knowledge of and experience in civil litigation, with a specific focus on employment law. Student will be provided opportunities, where available, to observe witness interviews, depositions and hearings. Student will also be assigned tasks that will provide them with an understanding of the various phases of litigation and common employment law issues.

Division: Infrastructire Program and Planning (IPPO) **Group:** IPPO
Mentor: Lewis, Deborah **Co-Mentor:** Cortez, Angelamaria

Internship Project Description

The student will spend their time at the Lab becoming familiar with the new IPPO division. They will be learning the basic principles of various teams in IPPO to include project initiation, real estate, campus site planning, and basic areas of portfolio management. They will attend various team meetings, help with project presentations, and analyze various contracts issued to ASM.

Division: Integrated Weapons Experiements (J-DO) **Group:** J-2
Mentor: Vigil, Marty **Co-Mentor:** Mueller, Joshua

Internship Project Description
This student will be learning about assembly, reading blue prints, and general tools.

Division: Materials Physics and Applications (MPA-DO) **Group:** MPA-11
Mentor: Droessler, Janelle **Co-Mentor:** Goff, George

Internship Project Description
The student will be assisting the Actinide Chemistry Team in MPA-11 on a variety of projects related to chemical separations of actinides and critical materials. Their tasks will include doing literature reviews, creating a technical library/database, assisting with data analysis and archiving, as well as a variety of administrative tasks including performing inventory for lab supplies, annual property inventory, and helping set up and stock new lab and office spaces.

Division: Materials Physics and Applications (MPA-DO) **Group:** MPA-11
Mentor: Medina, Marcella **Co-Mentor:** Rockward, Tommy

Internship Project Description
The student will be working with MPA-11 to help with administration duties within the group, such as tasks in Oracle, working with travel, and Ariba. They will maintain a daily log of the status of their tasks.

Division: Materials Science and Technology (MST-DO) **Group:** MST-16
Mentor: Parker, Stephen **Co-Mentor:** White, Joshua

Internship Project Description
 Administrative work only. The student will shadow experiments performed by their mentor. They will summarize data and create a short writeup of all experimental activity.

Division: Prime Contract, Interface and Policy Office (MISSASSUR) **Group:** PCIP-DO
Mentor: Daughton, Diane **Co-Mentor:** Borup, Ellen

Internship Project Description

POL Office - Learning about Laboratory policies - Working on documents (internal manuals, policies, procedures, etc.) proofing, providing input, data verification, etc. - Assisting with the group's electronic records management process/records storage - Providing ideas and input on the weekly NewsFlash newsletter - Participate in meetings with other Policy Office staff and customers - Interact with customers in various capacities including assisting them with questions, emails, etc. - The student will learn the MSS-MP document control process and will learn how to issue new revisions of O&Ms and PMIs. - The student will become familiar with the basics of various MSS-MP systems and equipment. - The student will network with SMEs and Communications Specialists to facilitate future projects.

Division: Program Project Interface (PPI-DO) **Group:** PPI-2
Mentor: Nelson, Kellen **Co-Mentor:** Voight, Nicole

Internship Project Description
The student will be assisting PPI-2 with data migration into a new SharePoint site set up for project/program management and business improvements. They will mentor with PPI Division SMEs and learn fundamentals of program management. Additionally, they will participate in the Lab's Student Symposium.

Division: Project Execution (PROJ-EX) **Group:** CMRR-PO
Mentor: Lucero, Edward **Co-Mentor:** Torres, Christian

Internship Project Description
CMRR Project Management Support.

Division: Project Execution (PROJ-EX) **Group:** PF4-DD
Mentor: Andrade, Stephanie **Co-Mentor:** Martinez, Daynee

Internship Project Description
ALDPI oversees a $7B portfolio of capital construction, decontamination, deactivation and demolition (D&D), and equipment installation projects to facilitate the modernization of the nuclear facility. ALDPI has been successful in developing field execution schedules (FESs) that contribute to accomplishing these various projects, but noticed a deficiency in debuting facility interface support resources to project managers and planners, which would ultimately streamline the field execution activities to encourage facility compliance, efficiency, and safety.

Additionally, ALDPI identified the need to circulate training requirements for performing non-administrative work in the nuclear facility, as this directly relates to who can perform activities inside or outside D&D enclosures. Due to the complexity of the facility and the technical information required to develop a reliable FES, ALDPI is requesting a summer student to showcase the facility interface resources, such as, but not limited to, modeling capabilities,

possible waste disposition pathways, and Integrated Work Document (IWD) development. The student will receive mentorship from ALDPI management, including Project Managers and Project Specialists, to first understand the group's goals and overall mission. They will become acquainted with the conduct of operations of the facility, including conduct of training, engineering and maintenance, in addition to quality assurance requirements. During which, they will become familiarized with fissionable material operations, along with the associated safeguards and security, and Nuclear Criticality Safety requirements. They will work directly with various Facility Interface Teams to understand how their efforts support the ALDPIs goals and directly contribute to the development of the FES. They will summarize the Team's functions and facility support capabilities in a visual presentation, i.e., poster or presentation, which will be publicized via a Los Alamos Unlimited Release (LA-UR).

Division: Project Execution (PROJ-EX) **Group:** PF4-DD
Mentor: Geyer, Leslie **Co-Mentor:** McAfee, Brian

Internship Project Description
The student will be providing assistance to work planners and schedulers, as they works to understand their critical role in construction, and how it applies to their intended field of engineering. There will be escorted trips to observe field work, but they will not perform work, as their assignment will be office work. They will shadow their mentor and one of the lead planners. They will be attending meetings, and learn the planning process from walk-downs to IWD development. They will also be assisting with administrative duties (copying, getting materials from the warehouse, and data input).

Division: Richard P. Feynman Center for Innovation (FCI-DO) **Group:** FCI-DO
Mentor: Martinez, Taylor **Co-Mentor:** Pastuovic, Colleen

Internship Project Description
The student will assist on various projects that involve conducting customer discovery and market research to assess the commercial potential for various Lab technologies. They will also work on projects related to our regional programs that could involve conducting market research or researching best practices for similar programs.

Division: Science Resource Center (SRO) **Group:** SRO-RL
Mentor: Casados, Tebols **Co-Mentor:** Varjabedian, Kathryn

Internship Project Description
The student will have the opportunity to learn practices of data maintenance in the Research Library's ILS system which includes working in the cataloging and circulation modules. They will shelve books and journals, scan and email articles for customers, straighten public areas, shift books and journals to new locations as needed, and mend damaged books and journals. In

addition they will be checking in and checking out books to customers, responding to customer emails, and filling customer requests. They will sort incoming mail and assist with miscellaneous projects as needed. They will work on special projects as assigned, shifting collections, cataloging maintenance projects, verifying electronic accessibility (comparing Alma against what really works at the publisher website), as well as other miscellaneous/special projects as they come up. This work will greatly benefit the quality and access of library data for both the Laboratory and the greater scientific community.

Division: Science, Technology and Engineering Programs Office (ALDWP-STEO) **Group:** ALDWP-STEO
Mentor: Eaton, Stacey **Co-Mentor:** Carver, Faith

Internship Project Description
The student will be responsible for scanning paper records for the Radioisotope Power System program, covering several decades of manufacturing data. They will manage the organization of their work developing a system for determining status and progress and will populate and update the virtual reference library on the team's Sharepoint site.

Division: Security Division (SEC-DO) **Group:** SEC-PS
Mentor: Dragan, Chad **Co-Mentor:** Martinez, Jenny

Internship Project Description
The student will be assigned to the Personnel Security Group who works to mitigate the risk individual workers pose by using a unique set of policies and procedures to confirm identity and citizenship, issue security badges, process clearances and monitor human reliability for workers handling the nation's most sensitive nuclear materials. They will complete any assignments requested by mentor or team lead, and provide high level customer support.

Division: Security Division (SEC-DO) **Group:** SEC-PS
Mentor: Williams, Karen **Co-Mentor:** Unzueta, Christina

Internship Project Description
The student will be assisting the Security Awareness Program with administrative activities, presentations, and customer support. This will include responding to phone calls, tickets, and walk-in customers as available. Additionally, they will provide assistance with database management and document storage/destruction

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Division: Sensative and Special Operations (SSO-DO) **Group:** SSO-3
Mentor: Marshall, Nicholas **Co-Mentor:** Stidham, Julianne

Internship Project Description

The student will be working with SSO-3 working in support of the UDev (Unclassified Development) network and its documentation, working with Splunk and Qmulos apps, as well as assisting SSO-3 UGS students.

Division: Sensative and Special Operations (SSO-DO) **Group:** SSO-3
Mentor: Stidham, Julianne **Co-Mentor:** Jenkins, Michael

Internship Project Description
The student will be working with SSO-3 on the Help Desk learning process development and working in support of the UDev (Unclassified Development) network and its documentation, working with Splunk and Qmulos apps, as well as assisting SSO-3 UGS students.

Division: Sensative and Special Operations (SSO-DO) **Group:** SSO-3
Mentor: Stidham, Julianne **Co-Mentor:** Martinez, Rosa

Internship Project Description
The student will be working with Carissa in SSO-3 to support the business processes and documentation.

Division: Service Innovation (SI-DO) **Group:** SI-DCRM
Mentor: Montoya, Kaylee **Co-Mentor:** Archuleta, Yvonne

Internship Project Description
The student will be hired by the Lab's Service Innovation-Document Control Records Management (SI-DCRM) organization to provide deployed records management support to the UI-OSI (Utilities & Infrastructure Operations Support and Improvement) organization. This records assignment will consist of processing various types of records from the UI organizational functions/activities. The records assignment will include, but not limited to, assisting with identifying the records scope, records inventory, updating organizational required Records Inventory Disposition schedule (RIDS), and processing records (identifying, scheduling, indexing, performing detailed data entry, scanning, quality checking and electronically capturing and importing records into the LANL Electronic Records Management System (ERMS/EDRMS)). The records work also includes the preparing (organizing, removing paper records from binders, staples, paperclips, etc.) of scanning activities. Student will work with UI customers on records management issues as needed. Student will be trained on the LANL Records Management processes and how to use Scanner equipment, the records Documentum application to ensure records information is electronically captured. Work on various other ongoing SI-DCRM/UI record initiatives. Student will be extensively trained by SI-DCRM records staff. Student must demonstrate effective communication skills with a strong customer service focus, close attention to detail and accuracy, strong record of working independently and as a team player, and an ability to be dependable, reliable and demonstrate organizational and time management

skills effectively. Some Document management experience and ability to read and understand technical and administrative information to identify the critical elements to capture for indexing records. Familiarity with database systems, keyboard and general office equipment skills.

Division: Weapons Mission Services (WMS-DO (ORI-DO)) **Group:** ORI-1
Mentor: Quintana, Amanda **Co-Mentor:** Montoya, Michelle

Internship Project Description
Assist with planning, logistics, and scheduling of all ALDWP live courses and trainings. Assist with scheduling of eight technical trainer schedules and six resource locations for the FHM and GBO initial and recertification programs. Assist with managing the registration and course credit in Utrain for all ALDWP Conduct of Operations courses. Assist with setting up, hosting and running in person trainings, procure equipment and supplies for the glove box, and forklift and vault training areas at Trident and the NET facility. Assist with updating relevant ORI-1 live course websites in CMS. Assist with the initiative to move from paper records to an electronic system by working with security, IT, and Utrain teams. Assist with the process improvement initiatives to gather more effective metrics for the usage of the facilities.

Division: Weapons Mission Services (WMS-DO (ORI-DO)) **Group:** ORI-1
Mentor: Sandoval, Eugene **Co-Mentor:** Archuleta, Rebekah

Internship Project Description
Assist with planning, logistics, and scheduling of all ALDWP trainings Assist with processing training records for ALDWP facilities. This will include assisting records team scanning and digitizing training records. Assist with setting up and hosting person trainings. Assist with the process improvement initiatives to gather more effective metrics for the usage of the facilities.

Division: Weapons Mission Services (WMS-DO (ORI-DO)) **Group:** ORI-6
Mentor: Montoya, Adam **Co-Mentor:** Martinez, April

Internship Project Description
Assist with planning, logistics, and scheduling of the doubling up office space initiative. Assist with planning, logistics, and scheduling of tenant improvement activities throughout the NET Facility. Assist with planning, logistics, and scheduling of FSR's A/V requests and IPSR's throughout the Trident and NET Facility. Assist with preventative maintenance planning, logistics, and scheduling for all printers. Assist six Project Managers and four Project/Training Facility Support activities. Assist with the process improvement initiatives to gather more effective metrics for the usage of the facilities. Procure equipment and supplies for the glove box, forklift, and vault training areas at Trident and the NET facility. Assist within the greeting area and directing employees and visitors throughout the facility. Assist with setting up, hosting, and running in person trainings.

Technical

Division: Accelerator Operations and Technology ([AOT-DO](#)) **Group:** AOT-AE
Mentor: Huang, En-Chuan **Co-Mentor:** Upadhyay, Janardan

Internship Project Description
The student will help the physics team program for control software, including plotting the beam line, creating the graphic user interface, and data processing.

Division: Accelerator Operations and Technology ([AOT-DO](#)) **Group:** AOT-AE
Mentor: Taylor, Charles **Co-Mentor:** Upadhyay, Janardan

Internship Project Description
Beam simulation of high energy transport lines. The student will work with their mentor in taking existing TRANSPORT scripts and converting them into Madx script formats. Both scripts will be run and compared. Their work will be used to help develop the auto-conversion software currently in development.

Division: Accelerator Operations and Technology ([AOT-DO](#)) **Group:** AOT-MDE
Mentor: Poudel, Anju **Co-Mentor:** Martinez, Jason

Internship Project Description
Mechanical Diagnostics Team in AOT-MDE at the Los Alamos Neuron Science Center ([LANSCE](#)) is in charge of maintaining all the diagnostic devices and ensuring their functionality to provide a reliable beam to the five experimental areas. The team repairs, leak checks, tests, and labels the devices and keeps them as a spare. The student will be assisting with all the activities mentioned and prepare a spreadsheet with their status. They will have a great opportunity to perform hands on work, learn about the devices, how to repair and test them, etc. They will also be learning SolidWorks 3D modeling and creating drawings. This will help them professionally to get a feel for real world problems and how to solve them. They are expected to present their work in a group meeting at the end of his internship.

Division: Accelerator Operations and Technology ([AOT-DO](#)) **Group:** AOT-MDE
Mentor: Singh, Bhavini **Co-Mentor:** Woloshun, Keith

Internship Project Description
The student has expressed interest in learning programming and spectroscopy. The student will use MATLAB programming to analyze microphone signals from experiments. This is fairly advanced programming but will allow the student to learn basics and depending on that

progress, work on the challenge of processing signals. The student will be introduced to statistical analysis and will program and plot relevant statistics using MATLAB. The student will concurrently work on updating the current EPICS GUI to LabVIEW. The student will have access to video tutorials, and one on one contact with National Instruments technicians who can help. The student's mentor will work one-on-one with the student to check progress on the development of the GUI. The student will spend two weeks learning how to use a spectrometer and prepare slides on what spectroscopy is used for in the field of Biomedical Engineering, which is the field they will pursue in college. The student will also spend two weeks learning basics of electricity and magnetism and how this relates to RF power and Induction heating. The student will summarize their work in presentation format and poster format and present it at the student symposium and the group. At the end of this internship, the student should have the following: a basic understanding of statistics/statistical analysis, an introduction to programing to perform basic calculations, experience creating a LabView GUI, and creating and giving presentations. Another aspect of this internship will be an emphasis on team work and working in a professional environment.

Division: Accelerator Operations and Technology (AOT-DO) **Group:** AOT-RFE
Mentor: Bradley, Joseph **Co-Mentor:** Valladares, Jesus

Internship Project Description
Assist with RF measurement, perform data analysis, and present results in using visual communication best practices.

Division: Accelerator Operations and Technology (AOT-DO) **Group:** AOT-RFE
Mentor: Castellano, Lawrence **Co-Mentor:** Van Rooy, Paula

Internship Project Description
The student will work with Low Level RF engineers and technicians on the upgrade of LLRF chassis for the Los Alamos Neuron Science Center (LANSCE) accelerator. The student will work on Digital low-level RF chassis assembly and chassis cable harnessing.

Division: Accelerator Operations and Technology (AOT-DO) **Group:** AOT-RFE
Mentor: Kwon, Sung **Co-Mentor:** Van Rooy, Paula

Internship Project Description
The student will work with the LLRF team on various software projects along with assisting LLRF team members when needed.

Division: Accelerator Operations and Technology ([AOT-DO](#)) **Group:** AOT-RFE
Mentor: Sanchez Barrueta, Maria **Co-Mentor:** Hall, Thomas

Internship Project Description
The 201 system uses 56 units of a pulsed RF detector. The RF detector or power head uses a microcontroller programmed with Embedded C to achieve communication with the monitoring system and to store the calibration of the divice. The assignment is to understand the program and its operation inside the power head and figure out how to place the calibration factors in an external file so that the programming file to all of the detectors is standardized. If any improvements can be made to the code, these will be documented and commented properly. If this is completed, the assignment will be to figure out a protocol of communication of the calibration factors to an outside device so that calibration may be contained within the power head and propagated to other devices.

Division: Accelerator Operations and Technology ([AOT-DO](#)) **Group:** AOT-RFE
Mentor: Valladares, Jesus **Co-Mentor:** Bradley, Joseph

Internship Project Description
RF Equipment Database, RF Measurement, and Data Analysis.

Division: Actinide Mterial Processing and Power ([AMPP-DO](#)) **Group:** AMPP-4
Mentor: Rios, Daniel **Co-Mentor:** Kruk, Izabela

Internship Project Description
The student will be given a collaborative project in support of the Surveillance and Monitoring Program. They will examine hundreds of laser confocal microscope (LCM) and metallography images for stress corrosion cracking. They are going to generate histograms for the number of cracks and their lengths/depths from these images. They will also learn to apply engineering and chemical principals to perform studies under control conditions to determine if stress corrosion cracking is continuing at the time of destructive examination of 3013 containers. They will expose 304L stainless steel specimens to non-radioactive corrosive solutions suspected to cause corrosion in 3013 containers packaged with chloride-bearing PuO2. This work will be performed by them under their mentor's supervision. They will learn to set up chemical reactions, use non-radiological inert gloveboxes, and have hands on experience on various analytical instruments (LCM, FT-IR, UV-Vis, and NMR). When they are not doing image analysis, they will be in the lab coming up with ideas on how to perform corrosion experiments. Additional assignments (supervised): - extending the experimental observations of SS corrosion in high temperature and in the absence of oxygen to appropriately model packaging and storage conditions of PuO2 - designing sample holders for the corrosion experiments and communicating with technical support/machine shop personnel regarding execution of the design - documentation of the experimental outcomes - LCM (laser confocal microscopy) data collection and analysis to establish depth, length, and distribution of corrosive features

observed on SS parts - preparation of LCM measurement and data analysis written procedures - introduction to WAMS (Wide Area 3D Measurement System) for corrosion and cracking observations - routine usage of chemistry lab equipment in accordance to PA-IWD-01486.

Division: Analytics, Intellgence and Technology (A-DO) **Group:** A-1
Mentor: Dauelsberg, Lori **Co-Mentor:** Parikh, Nidhi

Internship Project Description
The student will work on data analysis and visualization on multiple projects using Python, R, Java, and perhaps other programming languages. They will be encouraged to present work to the group and perhaps at the Student Symposium in the summer, or other similar forums.

Division: Analytics, Intellgence and Technology (A-DO) **Group:** A-1
Mentor: Fairchild, Geoffrey **Co-Mentor:** Pratt, Rebecca

Internship Project Description
Provide the opportunity to develop skills and gain work experience, while receiving exposure to a variety of STEM opportunities. Specific project focus will be computing and information technology and cyber security to include: data analytics, cyber domain threat characterization and mitigation, and various analysis assessments. Students will be given the opportunity to see how the group merges all-source intelligence on national security threats with cross-domain systems modeling and information synthesis and communication tools, to enable technology development and application in the national interest. Experience in projects where information and systems modeling is used to support national leaders responsible for making decisions when threats occur and to assist them in mitigating threats before they occur will be gained. Additionally, being a part of solving hard problems in multiple research areas and their intersections, including global and national security, artificial intelligence, persistent cyber threats, and critical infrastructure.

Division: Analytics, Intellgence and Technology (A-DO) **Group:** A-4
Mentor: Rawlings, Christopher **Co-Mentor:** Pratt, Rebecca

Internship Project Description
Provide the opportunity to develop skills and gain work experience, while receiving exposure to a variety of STEM opportunities. Specific project focus will be computing and information technology and cyber security to include: data analytics, cyber domain threat characterization and mitigation, and various analysis assessments. Students will be given the opportunity to see how the group merges all-source intelligence on national security threats with cross-domain systems modeling and information synthesis and communication tools, to enable technology development and application in the national interest. Experience in projects where information and systems modeling is used to support national leaders responsible for making decisions

when threats occur and to assist them in mitigating threats before they occur will be gained. Additionally, being a part of solving hard problems in multiple research areas and their intersections, including global and national security, artificial intelligence, persistent cyber threats, and critical infrastructure.

Division: Associate Laboratory Director for Infrastucture and Capital Projects (ALDICP) **Group:** ALDICP
Mentor: Knight, Roilynn **Co-Mentor:** Frye, Beth

Internship Project Description
Responsible for collaborating on a group project (such as construction technology, smart labs, etc.) for ALDICP and an individual project. Will be exposed to various functions within the Directorate to increase knowledge and experience. Will provide weekly briefing updates to senior leadership on project status, summer end out brief, and student symposium.

Division: Associate Laboratory Director for Infrastucture and Capital Projects (ALDICP) **Group:** ALDICP
Mentor: Knight, Roilynn **Co-Mentor:** Vigil, Jolene

Internship Project Description
Responsible for collaborating on a group project (such as construction technology, smart labs, etc.) for ALDICP and an individual project. Will be exposed to various functions within the Directorate to increase knowledge and experience. Will provide weekly briefing updates to senior leadership on project status, summer end out brief, and student symposium.

Division: Bioscience (B-DO) **Group:** B-GEN
Mentor: Hovde, Blake **Co-Mentor:** Erkkila, Tracy

Internship Project Description
The student will be utilizing their bioinformatics skills to develop a software package to identify off target genomic damage created CRISPR and other gene editing techniques using a K-mer based approach. They will be working in a computational office environment, not in the science laboratory environment. The goal of their work will be to publish a manuscript on the new methods they develop and to work with the FCI to protect the software developed. In addition, they will start to identify quantum computing applications for the Biosciences division.

Division: Chemistry (C-DO) **Group:** C-CDE
Mentor: Lee, Kwan-Soo **Co-Mentor:** Bezek, Lindsey

Internship Project Description

The student will learn about the preparation and characterization of polymer-based composites and 3D printing technique of stereolithography (SLA). Regarding the SLA printing technique, they will handle various kinds of polymer structures printed and understand the structure-properties-process relationship using mechanical testing. This project is a subset of a larger project that is investigating the printing of elastomeric polymers with tailored compressive behavior. Recognizing that polymers have rate-dependent mechanical properties, the student will evaluate how different loading rates affect tensile properties, which will enable better understanding of the material behavior and inform design decisions for tailorable performance.

Division: Chemistry (C-DO) **Group:** C-IIAC
Mentor: Adelman, Sara **Co-Mentor:** Mullis, Monica

Internship Project Description
The student will be carrying technical writing campaigns, primarily focused on communicating work related to OBES Heavy Element Chemistry efforts with the Seaborg Office. They will also be gaining an understanding of actinide and lanthanide chemistry by working with staff scientists and technical researchers on Heavy Element Chemistry research.

Division: Chemistry (C-DO) **Group:** C-IIAC
Mentor: Yang, Xiaokun **Co-Mentor:** Moore, Cameron

Internship Project Description
The student will be assisting the Inorganic Chemistry Team in C-IIAC on projects related to biomass conversion to renewable fuels and chemicals. Their task will include helping with instrumental characterization/analysis of non-hazardous research samples only, doing a literature review on bio-based surfactants, assisting with data analysis, and archiving, as well as administrative tasks including helping with quote generation for procurement, and contacting technician support for instrument maintenance and installation. They will also assist with manuscript writing and/or editing.

Division: Chemistry (C-DO) **Group:** C-PCS
Mentor: Jones, Makaela **Co-Mentor:** Kubicek-Sutherland, Jessica

Internship Project Description
The student will primarily work on the RAPTER project, where they will be assigned a pathogen of interest to research. They will perform a literature review to investigate host-pathogen interactions, virulence, vaccine developments, etc. about their pathogen.

Division: Computer, Computational, and Statistical Sciences ([CCS-DO](CCS-DO)) **Group:** CCS-2
Mentor: Ronning, Nicole **Co-Mentor:** Cheng, Roseanne

Internship Project Description
The student will be work on the ER project investing binary progenitors of GRBs and the dichotomy between radio loud and radio quiet GRBs. They will work with the group's cohort of summer students to simulate synthetic GRB spectra given the output of our GRMHD codes, and help make detection predictions based on the population synthesis simulations.

Division: Computer, Computational, and Statistical Sciences ([CCS-DO](CCS-DO)) **Group:** CCS-7
Mentor: Tang, Li **Co-Mentor:** Prabhu, Tarun

Internship Project Description
Translate some C benchmarks in the Polyhedral Benchmark suite into PyTorch implementations.

Division: Computer, Computational, and Statistical Sciences ([CCS-DO](CCS-DO)) **Group:** CCS-7
Mentor: Wofford, John **Co-Mentor:** Greenberg, Hugh

Internship Project Description
The mentor will be working with the student throughout their undergraduate studies to develop applications in support of the ASC program. They will have a LANL laptop assigned to them so they can access resources, such as email, remotely. They will work < 10 hours per two week pay period. The group is currently finishing a paper targeting the SC'22 conference, CANOPIE workshop and have plans to continue investigating related work with a collaborator at the University of Kansas.

Division: Detonator Production ([DP-DO](DP-DO)) **Group:** DP-DO
Mentor: Whitaker, Bernard **Co-Mentor:** Hickman, Elaine

Internship Project Description
Work with current DP engineers on a small 3D printing project to obtain a skillset that can be useful in the future. Assist in an inventory activity with the Inventory Planning Office. Attend the DP Training Lab to learn about basic TA-22 lab equipment usage and various unclassified processes (soldering, mock powder pressing, online learning, etc.) that Detonator Production Manufacturing Operations employees are exposed to on the manufacturing floor.

Division: Engineering Services (ES-DO) **Group:** ES-IPD
Mentor: Smith, Todd **Co-Mentor:** Blackburn, Forrest

Internship Project Description

The student will support numerous projects throughout the work assignment period, up to 20 hours per week. Funding sources will be the projects that they support. Typical functions will be quality assurance and coordination of Construction Documents. They will be mentored in performing basic architect/engineer support functions as the group develops drawings and specifications for construction projects. They will provide quality assurance for construction documents by verifying cross-referenced documents, collating document packages and supporting ES-IPD design management with planning and scheduling work. Their tasks will help improve work flow through ES-IPD and provide additional quality assurance for the written work products. Their planned functions are typically considered tedious and are sometimes overlooked. Their student status means that pay is commensurate with the anticipated tasks. The work that they are exposed to will equip them with knowledge of engineering and architecture at a time in their life that may guide their college and career choices.

Division: Engineering Services (ES-DO) **Group:** ES-LFO
Mentor: Fortin, Harold **Co-Mentor:** Martinez, Lorenzo

Internship Project Description
Engineering - gather field information and review engineering documentation to produce panel schedule.

Division: Enginerring Technology and Design (E-DO) **Group:** E-2
Mentor: Hyde, Jeffrey **Co-Mentor:** Dierauer, Mark

Internship Project Description
The student will be working in the E-2 Robotics group on Spot robot applications at the laboratory. They will be provided a summer project of creating an automated facility navigation and sample algorithm with the aid of their mentors. This will provide them the opportunity to work with the robot and gain experience programming code to command its operation along with higher level autonomy processes for determining where to go and how to navigate. They will produce a poster for the student symposium documenting their work and achievements. They will also provide a final demonstration of the status of their algorithm to the group at the end of the summer. Over the school year, they will continue to work refining her algorithm and potentially work with some hardware sensor integration.

Division: Enginerring Technology and Design (E-DO) **Group:** E-3
Mentor: Martinez, Vince **Co-Mentor:** Trujillo, Fabian

Internship Project Description
The student will assist the technicians in the group with building control racks, building cables, and other electromechanical system assembly activities.

Division: Enginerring Technology and Design (E-DO) **Group:** E-3
Mentor: Schloen, John **Co-Mentor:** Ruiz, Javier

Internship Project Description
The student will participate in the Robotics and Automation Summer School hosted by E-3 and E-division. The student will be one of three robotics team members. The robotics team will be responsible for programming the robotic arm storage system. RASS students will participate in weekly technical classes and facility tours. RASS students will co-author a paper for the Waste Management Symposium.

Division: Enginerring Technology and Design (E-DO) **Group:** E-6
Mentor: Hanson, Christina **Co-Mentor:** Whittemore, Anthony

Internship Project Description
The student has an interest in engineering and a background working with robotics, so the mentors designed several projects for them that will give them exposure and experience to a variety of aspects of engineering. The group has a fair bit of unclassified data that needs to be worked through, particularly for a set of computed tomography scans of candy that have been taken recently. They will also continue their work with aRTist, Solid works, CT workbench and Dragonfly, all software used routinely in the group to model CT scans on objects and analyze data. They have already started modeling a phantom with different densities and working to understand the parameters needed experimentally to see the smallest differences in materials density. In addition to these specific projects, there are several other sets of data that will need to be organized in Excel, and will rely on them to do this thoroughly.

Division: Environmental Protection and Compliance (EPC-DO) **Group:** EPC-ES
Mentor: Stanek, Jenna **Co-Mentor:** Gaukler, Shannon

Internship Project Description
The student will be assisting the biological resources program and the soil, foodstuffs, and biota program with field work, data entry, and other tasks that may benefit their experience with EPC-ES including spending time with other programs within the division if they align with their interests and as time allows. They will be exposed to compliance policy and field work components including, but not limited to, threatened and endangered species surveys, bird monitoring field techniques, small mammal trapping, fish and benthic macorinvertebrate sampling, and vegetation, soil, and sediment sampling. They will also assist with the following tasks if opportunities arise: report and document writing and review, writing ASER summary articles, literature reviews, sample and data organization, and webinars.

Division: Experience IT (XIT-DO) **Group:** XIT-DO
Mentor: Vigil, Tracy **Co-Mentor:** DeYapp, LeAnn

Internship Project Description
The student will gain understanding of I&T processes and structure. They will also be exposed to and gain knowledge in the many different services XIT provides.

Division: Experience IT (XIT-DO) **Group:** XIT-ISS
Mentor: Chacon, Jose **Co-Mentor:** Ramirez, Perla

Internship Project Description
XIT-ISS Central Tech Desk.

Division: Experience IT (XIT-DO) **Group:** XIT-ISS
Mentor: Granger, Jason **Co-Mentor:** Gonzalez, Kimberly

Internship Project Description
Repository Scienece and Operations (ESH-RSO) and XIT-ISS Student Internship with the LANL Carlsbad Office Information Technology group. The primary responsibilities include providing technical support to the RSO staff on desktops, laptops, printers, etc.

Division: Experience IT (XIT-DO) **Group:** XIT-TSS
Mentor: Lattner, Edward **Co-Mentor:** Salas, Ben

Internship Project Description
Will be assisting the Lab's XIT-Division with the organization XIT-TSS under the Voltron Team. Primarily working with the CDC team processing and configuring computer systems for deployment to end users.

Division: Experience IT (XIT-DO) **Group:** XIT-TSS
Mentor: Martinez, Galvin **Co-Mentor:** Salas, Ben

Internship Project Description
DeployIT Operations Support.

Division: Experience IT (XIT-DO) **Group:** XIT-TSS
Mentor: Salas, Ben **Co-Mentor:** Roberts, Osiris

Internship Project Description
Will be assisting the Lab's XIT-Division with the organization titled XIT-TSS under the Voltron Team.

Division: Experience IT (XIT-DO) **Group:** XIT-TSS
Mentor: Sandoval, Leslie **Co-Mentor:** Morales, David

Internship Project Description
Student will be assisting the Lab's XIT-Division with the organization titled XIT-TSS under the EasyIT team.

Division: Experience IT (XIT-DO) **Group:** XIT-TSS
Mentor: Sandoval, Leslie **Co-Mentor:** Trujillo, Carlos

Internship Project Description
Student will be assisting the Lab's XIT-Division with the organization titled XIT-TSS under the EasyIT team.

Division: Experience IT (XIT-DO) **Group:** XIT-TSS
Mentor: Sandoval, Leslie **Co-Mentor:** Valdez, Victoria

Internship Project Description
The student will be assisting the Lab's XIT-Division with the organization titled XIT-TSS under the EasyIT team.

Division: Experience IT (XIT-DO) **Group:** XIT-TSS
Mentor: Lattner, Edward **Co-Mentor:** Salas, Ben

Internship Project Description
Help with CDC operations. Processing and building computer systems. Help with DeployIT operations. Hotpatch and configuration management.

Division: Institutional Quality and Performance Assurance (IQPA-DO) **Group:** IQPA-MPCL
Mentor: Valdez, Diedrie **Co-Mentor:** Trujillo, Nestor

Internship Project Description

Collaborate between NPI-7 and IQPA-MPCL to learn the M&TE process and how it all ties together.

Division: Integrated Weapons Experiements (J-DO) **Group:** J-6
Mentor: Garcia, Luis **Co-Mentor:** Archuleta, Rita

Internship Project Description
The student will help assemble and wire systems used at DARHT such as Vacuum Control Boxes. They will learn the topics of PLCs, basic programming, and how to interpret wiring diagrams. They will also be working with a mechanical engineer and assisting him with Variable Field of View and other mechanical systems at DARHT.

Division: Intelligence and Space Research (ISR-DO) **Group:** ISR-1
Mentor: Esch, Ernst **Co-Mentor:** Larson, Eric

Internship Project Description
The Student will be a member of the ADReSS collaboration, a project founded to support the TA-55 Waste characterization and shipping program. In this project the group is looking for creative solutions to difficult and unique problems that revolve around nuclear waste. The student will work independently when applicable but with daily input and supervision from their mentor. Initially meeting to convey the need to fully understand the goals of the project and have a clear understanding of expectations, culture, and deadlines in the group and team. All of the project described will be presented in either an internal task, a student symposium, or even at a national or international conference. The student will have a choice of the following summer projects within this program: 1) TWF warehouse ceiling reconstruction - this project involves the use and training of LIDAR, creating a point cloud of the TWF warehouse ceiling and reconstructing the pipes, heaters, luminaires, etc. as models in the new prototype space to recreate a real size mock-up of the ceiling. The project will include the refinement of skills such as computer readout for the LIDAR cloud. The point cloud conversion to Solid Works. Creating an equipment list to purchase materials for the live size models of the ceiling structure and verification measurements to ensure 1:1 model accuracy. 2) WCATS to ASRS software interface - for this project, the student needs to design a software interface that will allow the WCATS database to communicate the ADReSS warehouse database software to ensure proper communication between the two. This project is an advance level project. 3) Design a drum inspection station. The drum inspection station will be comprised of a rotation stand and optics to conduct a drum inspection. The drum needs to rotate 360 degrees on the stand and the inspector needs to be able to see every part of the drum surface. A possibility to electrically document the inspection will be considered a benefit. 4) Testing of mini pallet locking mechanism. For the ADReSS project a mini pallet was design with lock to secure drums from falling off. The mechanisms must be tested. A test stand has been designed and experiments need to be conducted to identify how well the locks perform. This work will be documented and published in a peer-reviewed journal. 5) Design of low level waste bin - TA-55 has ergonomic

issues with the current work process involving waste removal from labs. To improve the process a new waste bin, collection cart, and transfer stand needs to be designed. To accomplish this project the student will have to talk to the waste collectors, the supervisors and workers and then create a new way to deal with the waste bags. 6) Spider Stand - at the RANT facility, a lifting device used to lift 55 gallon drums into the waste overpack container needs to be parked on a stand in a safe manner. A student can work on creative ideas and concepts and work with a seasoned engineer/designer to create this stand. 7) Design of software for testing drum strength.

Division: Intelligence and Space Research (ISR-DO) **Group:** ISR-1
Mentor: Galassi, Mark **Co-Mentor:** Cornejo, Juan

Internship Project Description
The student will work on the Linux systems programming aspects of Diorama. They are an unusual high school junior, who has been using Linux as their main platform for a long time now, and has plenty of experience programming in Python. They will focus on container orchestration, container delivery, and explore whether the group can use ultra-light "apptainers" for Diorama.

Division: Intelligence and Space Research (ISR-DO) **Group:** ISR-3
Mentor: Lee, Gregory **Co-Mentor:** Buck, Steven

Internship Project Description
The student will work to create Web-based data visualizations for live telemetry display. They will create an application utilizing the Python Dash and Plotly frameworks for display and PeeWee for data retrieval. This leverages them prior experience developing visualizations for high altitude balloon flights.

Division: Intelligence and Space Research (ISR-DO) **Group:** ISR-4
Mentor: Mendel, Susan **Co-Mentor:** Kirby, Andrew

Internship Project Description
The student will learn to use laboratory instruments and will develop Python code to help with laboratory testing as needed. They will most likely will be working on Gryphon and will help with SWIL/HWIL testing.

Division: Materials Physics and Applications (MPA-DO) **Group:** MPA-11
Mentor: Kreller, Cortney **Co-Mentor:** Rockward, Tommy

Internship Project Description

The student will perform work related to fuel cells to meet varying power source requirements. The student will prepare components for fuel cell builds, build fuel cell stacks, learn to test the stacks performance, and learn to conduct materials characterization on the various components.

Division: Materials Physics and Applications (MPA-DO) **Group:** MPA-11
Mentor: Prisbrey, Milo **Co-Mentor:** Pantea, Cristian

Internship Project Description
Create a python based signal processing and visualization toolbox for acoustic resonance spectroscopy data.

Division: Materials Physics and Applications (MPA-DO) **Group:** MPA-11
Mentor: Prisbrey, Milo **Co-Mentor:** Pantea, Cristian

Internship Project Description
Create a python based signal processing and visualization toolbox for acoustic resonance spectroscopy data.

Division: Materials Physics and Applications (MPA-DO) **Group:** MPA-CINT
Mentor: Derby, Benjamin **Co-Mentor:** Fensin, Saryu

Internship Project Description
The student's skills in robotics, programming, and a general proficiency in science meshes well with the kind of person the group is looking for in the Quasi-static and dynamic behavior of materials team at CINT-LANL. Following the scientific process throughout the summer, the student will help the team solve the ever-present question of how to automate mechanical behavior testing through a combination of robotics and machine-learning programming. This will involve the student learning the mechanical behavior testing process and equipment at first and then developing a robotic arm for automatic, high-throughout testing.

Division: Materials Physics and Applications (MPA-DO) **Group:** MPA-CINT
Mentor: Fensin, Saryu **Co-Mentor:** Schembri, Philip

Internship Project Description
The student will work on the GRANTA project to input our mechanical testing data into this database. They will learn about how the group collects data and how it is used at the laboratory.

Division: Materials Physics and Applications ([MPA-DO](#)) **Group:** MPA-CINT
Mentor: Hollingsworth, Jennifer **Co-Mentor:** Bowes, Eric

Internship Project Description
For a work experience starting in the summer, the mentors will teach students how to analyze, plot, and interpret data, starting with electron micrographs, for which there is a critical need in the team of Postdocs and advanced students. As they progresses, the mentors will work toward engaging the in other low-hazard work, including analysis of blinking/bleaching movies, quantum yield calculations, and if time allows, operation of basic spectroscopy instruments.

Division: Materials Physics and Applications ([MPA-DO](#)) **Group:** MPA-CINT
Mentor: Jones, Andrew **Co-Mentor:** Hollingsworth, Jennifer

Internship Project Description
The student will work on developing sample preparation techniques for the mechanical exfoliation of 2D materials. They will learn optical microscopy and image analysis as a means of identifying 2D materials, will learn to exfoliate 2D transition metal dichalcogenides for study by Postodoctoral researchers, and will learn to characterize their thickness using atomic force microscopy techniques.

Division: Materials Physics and Applications ([MPA-DO](#)) **Group:** MPA-CINT
Mentor: Kim, Kyungtae **Co-Mentor:** Hollingsworth, Jennifer

Internship Project Description
The student will learn how to process and analyze optical data and electron microscopy images. They will also learn to operate a dip-pen nanolithography system and an atomic force microscope.

Division: Materials Physics and Applications ([MPA-DO](#)) **Group:** MPA-CINT
Mentor: Morales, Demosthenes **Co-Mentor:** Hollingsworth, Jennifer

Internship Project Description
The student has an interest in both chemistry and biology. Two projects have been identified at the interface of chemistry and biology that would benefit from a dedicated, enthusiastic student to push them forward. Both entail surface functionalization (changing the surface chemistry) of quantum dots: (1) quantum dots for antibody conjugation to be used in a lateral flow assay (like the at-home Covid tests), and (2) a project on fungi: bacteria interactions in which the quantum dot becomes "biominerlized" and are used to track nutrient movement through fungi (by light emitted from the quantum dot). They will learn nanomaterial chemical functionalization and, once learned, they will be able to apply them to these two projects. They will apply their interest in science, their natural meticulous nature, and their detail-oriented observational skills

to learn this useful chemical methodology, making a real impact on two interdisciplinary projects.

Division: Materials Physics and Applications (MPA-DO) **Group:** MPA-CINT
Mentor: Padmanabhan, Prashant **Co-Mentor:** Azad, Abul

Internship Project Description
The student is currently hired as an intern to help commission a wide field, broad spectrum time-resolved micropscopy tool that utilizes an array lock-in detector. They will utilize their experience in computer programming, LabView, and electronics, working with the team of graduate students, Postdocs, and staff to integrate their measurement tools with the experimental system.

Division: Materials Physics and Applications (MPA-DO) **Group:** MPA-CINT
Mentor: Williams, Darrick **Co-Mentor:** Jones, Andrew

Internship Project Description
The student will be working with their mentors to design parts for a low-temperature microscopy stage. They will focus on learning to use 3D modeling software, Solidworks, and then implement that software as a means of designing sample support parts for a closed-cycle helium cryostat. Their work would be primarily computer based.

Division: Materials Physics and Applications (MPA-DO) **Group:** MPA-Q
Mentor: Newell, Raymond **Co-Mentor:** Civale, Leonardo

Internship Project Description
The student will join the group's efforts in quantum science and technology. We seek to develop and ultimately deploy free-space optical links suitable for long-range distribution of quantum information such a entangled photon pairs or other non-classical states of light. As an entry-level software engineer, they will develop a simulation tool to model optical links through the Earth's atmosphere. Physical effects to consider include turbulence, scattering, absorption, and background solar radiation.

Division: National Security Education Center (NSEC) **Group:** NSEC
Mentor: Farrar, Charles **Co-Mentor:** Wachtor, Adam

Internship Project Description
The student will do general lab organization to support various Engineering Institute education programs. They will be assigned test fixture design problems and, after mentor approval, they will construct the test fixtures and demonstrate that they meet design parameters. They will

also help with Los Alamos Dynamics Summer School and Los Alamos Judicial Science School lab preparation activities.

Division: Network and Infrastructure Engineering (NIE-DO) **Group:** NIE-IS
Mentor: Morgan, Keith **Co-Mentor:** Zugger, Peter

Internship Project Description
Continue to work with the Switch Refresh Project. The student will continue to assist and learn how to automate day to day work through Python code.

Division: Network and Infrastructure Engineering (NIE-DO) **Group:** NIE-CS
Mentor: Nolting, Walter **Co-Mentor:** Espinosa, Martha

Internship Project Description
Assist with the systems administration of business servers in the unclassified network. Assist with patching servers, upgrading servers, and building new servers using IOD VMware and physical systems. Further OS troubleshooting and documentation.

Division: Operations (DDOPS) **Group:** DDOPS
Mentor: Pillai, Rekha **Co-Mentor:** Powell, James

Internship Project Description
The student will join the Work Planning and Control Project team to help develop and apply Artificial Intelligence-based tools to help codify Form 2101 data and even manually enter some of the data that can't be converted easily. The Form 2101 data is used by the Lab's Facility Operations Directors to identify facility or location specific hazards and controls. This data is important for the WPC tool, WPC@LANL. Their work will complement the existing team and they can make valuable contributions to the WPC Project effort while learning AI technology and a special use case. Specific tasks will include reviewing 2101 forms, review and learn AI-based tools, set up the tool to gather specific data associated with location information, hazards and controls associated with this location, verify that the information gathered is consistent with what is in the form, and convert the data into tables that can be consumed by WPC@LANL.

Division: Physics (P-DO) **Group:** P-1
Mentor: Albert, Andrea **Co-Mentor:** Harding, James

Internship Project Description
The High Altitude Water Cherenkov (HAWC) Gamma-Ray Observatory has been fully operational since 2015. The group searches dark-matter rich regions of the sky for cosmic gamma rays from dark matter interactions. The student will contribute to a dark matter search in the Andromeda Galaxy, working with and contributing to HAWC's software suite based in Python.

Division: Physics (P-DO) **Group:** P-3
Mentor: Ito, Takeyasu **Co-Mentor:** Clayton, Steven

Internship Project Description
The student will work with scientists, engineers, and technologist in the P-3 neutron team on SNS nEDM, LANL nEDM, UCNA+, and UCNtau+ experiments. They will lead or assist with various R&D activities. Specific tasks include: assembling the measurement cells, electrodes, and UCN (ultracold neutron) valves in the vacuum chamber for the nEDM experiment, and assembling and testing the performance of the UCN switcher for the UCNA+ experiment. They will participate in taking data with UCN and will analyze part of the data as well.

Division: Physics (P-DO) **Group:** P-4
Mentor: Johns, Heather **Co-Mentor:** Kozlowski, Pawel

Internship Project Description
Student will compare distance traveled with time for the shock (from radiographs) and the radiation flow (from 1-D spectra) to initial conditions from laser drive and foam density. This will require running small pre-written codes to extract laser drive characteristics such as energy delivered, duration, and rise/fall. Student will use this information and background in statistics to extract trends relating these initial conditions to the final result for comparison to previously existing work in simulation space.

Division: Physics (P-DO) **Group:** P-4
Mentor: Jorgenson, Harold **Co-Mentor:** Morrow, Tana

Internship Project Description
Work scope for summer will include two parts. The first will be to work with another summer student in P-4 to consolidate and organize the large number of legacy tools and toolboxes that P-4 has. The second will be to complete a design project. Organization of the tools and toolboxes will include the following: research the principles of 5S and incorporate into plan for organizing new lab space, repopulate toolboxes with tools sorted from last summer. Label toolbox drawers with contents, and document additional items that need to be purchased to complete minimum kit for each box. Design project will include the following: with mentor or designee, discuss design requirements for form, fit, and function for engineering project, continue learning SolidWorks to include creation of part models, assembly models, and part and assembly fabrication drawings. These skills will be learned by utilizing SolidWorks tutorials, YouTube videos, and from instruction from mentors. The student will also develop a design that meets the requirements for form, fit, and function and develop manufacturing documentation to include an assembly drawing and appropriately toleranced part drawings.

Division: Physics (P-DO) **Group:** P-4
Mentor: Wong, Chun-Shang **Co-Mentor:** Batha, Steven

Internship Project Description
Use Python and/or other software (ImageJ) to perform image analysis of proton radiographs obtained at Omega EP. Depending on their interest, analysis includes plotting the line outs from radiographs, fitting backgrounds to analytic functions, calculating contrast to noise ratios along line outs, edge finding of radiographed objects, etc.

Division: Plutonium Facilities Engineering (PFE-DO) **Group:** PFE-DO
Mentor: Friar, James **Co-Mentor:** Spinks, Micki

Internship Project Description
Build a relationship and give exposure to mechanical engineering for a bright high school student. The student has expressed interest in pursuing a mechanical engineering degree and has taken some intro engineering classes.

Division: Plutonium Facilities Engineering (PFE-DO) **Group:** PFE-WF
Mentor: Arce Ramos, Keira **Co-Mentor:** Stringfield, Randal

Internship Project Description
The student will assist the PFE-WF team with day-to-day engineering related activities at both the RLW and LLW facilities. Assigned tasks will include implementation of AP-341 procedure to develop a DCF for changes to the RLW rotary vacuum filter system, verification of engineering documents uploaded to EDRMS, and edits to facility system drawing.

Division: Repository Science and Operations (RSO) **Group:** RSO
Mentor: Davis, Jon **Co-Mentor:** Otto, Shawn

Internship Project Description
ESH-RSO/Student Internship with the LANL-CO Test Coordination Office (TCO). The primary responsibilities include working with RSO staff for the activities associated with conducting science and testing activities in the WIPP underground for the DOE-CBFO and Integrated Project Team Charter in an efficient, safe, and quality and environmentally compliant manner. Assist TCO staff with experiment maintenance, documentation, and technical data management geared towards Salt Disposal R&D related to Salt Thermal Testing in Heated Boreholes. Additional assignments may include field oversight and work control documentation review/development related to Salt Disposal R&D, NMSU low-background radiation biological

experiments conducted in the WIPP underground, and Sandia National Laboratory development and testing of geotechnical engineering instruments.

Division: Repository Science and Operations (RSO) **Group:** RSO
Mentor: Watson, Lisa **Co-Mentor:** Montoya, Jason

Internship Project Description
The LANL-CO provides technical assistance to the DOE Carlsbad Field Office (CBFO) Office of the Manager. One of the responsibilities of the science advisory team is to perform technical reviews of the chemical compatibility evaluations that are developed by Waste Isolation Pilot Plant (WIPP) M&O for each waste stream being disposed at the WIPP. The student will engineer/develop a database to track progress, reviewer comments, due dates etc., of these reviews. They will also be tasked to engineer/develop a master chemical database for each identified chemical identifying the appropriate reactivity group number, chemical incompatibilities, potential reactions, and identify their properties and behaviors during processing.

Division: Science, Technology and Engineering Programs Office (ALDWP-STEP) **Group:** STEP-ARIES
Mentor: Grindstaff, Joanne **Co-Mentor:** Villareal, Karen

Internship Project Description
This student will support the ARIES Program supporting the Program Office with project management, coordination with external interfaces, drafting and editing monthly reports, and learning about finances and cost accounting. In addition, the technical work of oxide production being performed in PF-4 will showcase STEM fields that the student can apply what they've learned and find focus areas of interest for their future.

Division: Service Innovation (SI-DO) **Group:** SI-DCRM
Mentor: Fredenburg, Tammie **Co-Mentor:** Geyer, Leslie

Internship Project Description
The student will be working with the ALDPI team responsible for facilitating data utilization developed from schedules and budget information in the field execution (construction arm). This work often includes costs, information technology tools, records management, work package understanding, and data translation to enable work authorization. They will be shadowing others to learn the activities of this team and to facilitate successful data development and stewardship. The group will also have specific projects for the student to work on during the summer.

Division: Service Innovation (SI-DO) **Group:** SI-DCRM
Mentor: Matuszak, Karen **Co-Mentor:** Montoya, Ashley

Internship Project Description
Assist with EDRMS metadata updating and work on various records projects to include scanning and uploading into EDRMS.

Division: TA-55 Facility Operations (TA55-DO) **Group:** TA55-WF
Mentor: Valdez, Carlos **Co-Mentor:** Quintana, John

Internship Project Description
Provide support to TA55-WF operations and maintenance and engineering. Duties will include records management and disposition, small projects, scheduling, and ancillary duties administrative in nature.

Division: Theoretical (T-DO) **Group:** T-1
Mentor: Yang, Ping **Co-Mentor:** Taylor, Michael

Internship Project Description
The student will be leveraging the experimental crystallographic databases to extract chemical trends in heavy-element and other metal-coordinating functional groups. This research will advance the development of understanding for clean energy science. To accomplish this task she will develop skills in python programming and data science and building knowledge of organometallic chemistry.

Division: Theoretical (T-DO) **Group:** T-2
Mentor: Guo, Fan **Co-Mentor:** Li, Hui

Internship Project Description
The student will work on particle acceleration at Collisionless shocks. They will learn the physics mechanism and run physics-based codes for modeling the acceleration process.

Division: Theoretical (T-DO) **Group:** T-5
Mentor: De, Soumi **Co-Mentor:** Tews, Ingo

Internship Project Description
The student will start with literature studies on the physics of neutron stars, dense nuclear matter, and gravitational waves, with their mentors guiding them by suggesting various reading materials and lecture notes. They will then learn basics of data analysis including how to graphically represent and interpret scientific results. They will use this training to run existing

Python computer codes to perform a computational parameter estimation analysis, using real gravitational-wave observational data and nuclear physics information to probe the nuclear equation of state. For this analysis, the student will be following open-source tutorials from a published study in this field and will reproduce the results of that study, under the guidance of their mentors. The analysis will be performed with the open-source PyCBC software, for gravitational-wave data analysis. If time permits, they will use the same strategy to help with running the PyCBC pipeline for an ongoing research project at LANL, leading to new results in probing neutron star matter. At the end of their internship, they will produce a written report describing their research project and skills they have developed. They will also give a short oral and/or poster presentation, either at the annual LANL student symposium OR at the LANL Center for Theoretical Astrophysics group meeting OR a T-division lightning talk. The research project will entail skill set development in basics of data science and computational physics, as well as scientific reading and communication. Specific technical skills the student will learn include statistics, running Python and bash scripts, and getting first experiences with running data analysis software on high-performance computing clusters.

Division: Theoretical ([T-DO](#)) **Group:** T-5
Mentor: Resendiz Lira, Pedro **Co-Mentor:** Maldonado, Carlos

Internship Project Description
The student will join the cold plasma team in T-5 to perform research on the cold plasma populations in the magnetosphere. Specifically, they will perform data analysis on the dataset generated as a decomposition of the plasma distribution function, obtained from the Van Allen Probes Spacecraft, into a sum of Maxwellian distributions. The objective will be to study statistically the properties and behavior of the cold particle populations in the Earth's magnetosphere as a function of time, L-shell, and geomagnetic activity.

Division: Theoretical ([T-DO](#)) **Group:** T-6
Mentor: Dhaubhadel, Sayera **Co-Mentor:** Cohn, Judith

Internship Project Description
The student will learn how to formulate complex problems in a machine learning problem. They will participate in group meetings and discussions of this work for either VA (medical outcomes analysis), Rapter (vaccine design), or the NCI Pilot three project (natural language processing of cancer pathology reports). They will learn the basics of Python programming and critical thinking in the context of scientific work.

Division: Theoretical ([T-DO](#)) **Group:** T-6
Mentor: Gnanakaran, Sandrasegaram **Co-Mentor:** Kubicek-Sutherland, Jessica

Internship Project Description

The student will explore the applicability of ML models (eg. VAE) that utilize latent space for identifying target receptor-ligand pairs and viral protein-host protein pairs.

Division: Weapons Stokpile Modernization (Q-DO) **Group:** Q-18
Mentor: Christensen, Kyle **Co-Mentor:** Steinzig, Michael

Internship Project Description
Electro mechanical design of a multipurpose evaluation test stand. The designed equipment will have functionality to bend tubing, tensile and compressively load weldments, and cyclically load joints.

Division: X-Computational Physics (XCP-DO) **Group:** XCP-4
Mentor: Shashkov, Mikhail **Co-Mentor:** Lipnikov, Konstantin

Internship Project Description
Student will work on learning, exploring, and developing new algorithms for recovering polygons in 2D from its moments. This is a very important topic for several LANL projects, including interface reconstruction.

Division: X-Computational Physics (XCP-DO) **Group:** XCP-5
Mentor: Rehn, Daniel **Co-Mentor:** Wills, Ann

Internship Project Description
The student will be learning to run quantum simulations of materials on HPC machines and will extract so-called Wannier functions from interesting materials. They may also investigate the connection between band structure and Wannier functions and explore how Wannier functions change with changes to cell shape and/or material structure.

Division: X-Theoretical Design (XTD-DO) **Group:** XTD-DO
Mentor: Johnson, Jarrett **Co-Mentor:** Upton Sanderbeck, Phoebe

Internship Project Description
The student is working to develop new capabilities for the Enzo cosmological radiation-hydrodynamics code. Specifically, they are currently learning to run the code on the LANL HPC platforms, which will allow the group to run large cosmological simulations with the relatively high spatial resolution required to model black hole accretion. Then, using a new black hole accretion prescription implemented by another student, they will modify the radiative feedback prescription in order to investigate how it, coupled with the new accretion prescription, impacts black hole growth. Their final goal is to carry out a cosmological simulation with these models, in order to predict the observational signatures of galaxies hosting black holes that may be detected by the James Webb Space Telescope.

Division: X-Theoretical Design ([XTD-DO](#)) **Group:** XTD-IDA
Mentor: Kline, John **Co-Mentor:** Smidt, Joseph

Internship Project Description
The student will execute and analyze simulations of laser matter interactions with the LANL xRage radiation hydrodynamics code. Using input scripts and editing the input decks, they will perform simulations of experiments completed on the Trident laser facility. Using Python scripts, they will analyze the simulation output to determine the spatial electron density and temperature comparing the results to data. This work will require them to learn how to execute simulations on high performance computers modifying the input, execute Python scripts making modifications as needed. This work will be done with support and supervision of the mentors.

Division: Computer, Computational, and Statistical Sciences ([CCS-DO](#)) **Group:** CCS-2
Mentor: Ronning, Nicole **Co-Mentor:** Cheng, Roseanne

Internship Project Description
The student will be work on the ER project investing binary progenitors of GRBs and the dichotomy between radio loud and radio quiet GRBs. They will work with our cohort of summer students to simulate synthetic GRB spectra given the output of our GRMHD codes, and help make detection predictions based on our population synthesis simulations.