

Science Undergraduate Laboratory Internships (SULI)

Summer 2022 - Application for: Weston Timothy Schwartz

APPLICANT PROFILE

General Applicant Information

First Name: Weston

Middle Name: Timothy

Last Name: Schwartz

Previous Last Name(s):

Primary Email Address: schwartzw2024@ksu.edu

Alternate Email Address 1: westonschwartz79@gmail.com

Alternate Email Address 2:

ORCID: [0000-0001-7416-6896](https://orcid.org/0000-0001-7416-6896)

Current Address

Primary Phone Number: 605-653-0523

Alternate Phone Number:

Citizenship/Languages/Eligibility Information

I will be 18 years of age or older by the time the internship begins: Yes

Are you a U.S. Citizen? Yes

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EDUCATIONAL BACKGROUND

Academic Information

Are you currently attending a community college or 2-year college?

No

Current academic status:

Sophomore

If you are selected as a participant in this DOE program, will you receive academic credit from your university/college for participating?

No

Undergraduate Institution Information

College/University Country: United States and U.S. Territories

College/University State/Province/Territory:

Kansas

College/University Name: Kansas State University

College/University Address: Manhattan, KS, 66506

College/University City: Manhattan

College/University Zip Code: 66506

Expected/Declared Major: Physical Sciences - Physics

Minor and/or Concentration Expected/Declared:

Engineering - Nuclear

Expected Degree From This College/University:

Bachelor's

Expected/Completed Graduation Date:

May / 2024

Transcript:

Transcript.pdf

Does this institution provide grades?

Yes

GPA Scale:

4.0

Total Attempted Credits:

47.00

Total Earned Credits:

32.00

Total Quality Points:

107.00

GPA:

3.34

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Science, Technology, Engineering and Mathematics (STEM) Courses

Course Title: Applied Matrix Theory

Course Number: 551

Enrollment Status: Currently Enrolled

Course Title: Calculus II

Course Number: 221

Enrollment Status: Recently Completed

Course Title: Calculus III

Course Number: 222

Enrollment Status: Recently Completed

Course Title: Fundamentals and Principles of Nuclear Engineering

Course Number: 495

Enrollment Status: Currently Enrolled

Course Title: Ordinary Differential Equations

Course Number: 340

Enrollment Status: Currently Enrolled

Course Title: Physics I

Course Number: 213

Enrollment Status: Recently Completed

Course Title: Physics II

Course Number: 214

Enrollment Status: Currently Enrolled

Course Title: Principles of Mechanical Engineering

Course Number: 101

Enrollment Status: Recently Completed

High School Graduation or GED

Date of High School Graduation or GED: May / 2020

Country: United States

City: Yankton

State/Province/Territory: SD

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WORK EXPERIENCE & SKILLS

Work Experience

Name of Place of Employment or Activity:	Department of Mechanical and Nuclear Engineering at KSU
Dates of Employment or Activity:	From 9/27/2021 To Present
Hours Per Week:	10.0
Primary Duties:	As an undergraduate research assistant my main responsibilities are to perform task needed from the graduate student I am working for. These task are typically routine task that need little to no expertise. This can be summed up as a "lab hand"
Tasks Performed:	Some of the resent task I've done have included calibrating and data collecting for an on going project involving radiation detection. From these activities I've had to deal with radioactive material such as Cesium-137 and Californium-252. I've also been tasked with inventory responsibilities. These include taking inventory and being responsible for ordering needed chemical supplies. Other tasks I have done are basic mundane office related things such as running and collecting mail/packages

Name of Place of Employment or Activity:	US Army Corps of Engineers
Dates of Employment or Activity:	From 5/17/2021 To 8/13/2021
Hours Per Week:	40.0
Primary Duties:	NOTE: This job is a summer-time position. I have worked there for three summers now so I have approx. 9 months experience there. My primary duties are to maintain outside equipment and structures located around the Gavins Point Project. Gavins Point is a hydroelectric dam/power-plant so the maintenance is a crucial job for ensuring safety and efficiency. This outside maintenance ranges anywhere from simple plumbing to road maintenance, all the way up to generator-intake cleaning
Tasks Performed:	Some notable tasks I have done while working there include assisting in replacing an underground sewage lift station, maintaining dam quality (keeping grass at acceptable length, filling holes, etc), and cleaning debris out from the intake to the generators and turbines. All of these task have needed team work skills, cooperation, and an understanding of procedures, which are all skills I have developed and grown upon since. Because the Gavins Point Project is fairly large, a lot of my time there is spent making sure the outside components are running smoothly

Professional Associations

Are you a member of any professional organizations?	Yes
Professional associations you are affiliated with:	American Nuclear Society

Laboratory/Technical Skills

Experience with advanced laboratory techniques or equipment:	I have experience with operating scanning electron microscopes implemented with x-ray florescence. I also have experience using standard optical microscopes along with basic pipetting techniques for micro-volumes. As for procedure/techniques, notable experience I have involves working in a clean room and the necessary precautions needed with that
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Science Undergraduate Laboratory Internships (SULI)

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PROGRAM INFORMATION

Eligibility

Have you previously participated in 2
SULI appointments? No

Previous DOE Internship/Fellowship Experience

Have you ever had an
internship/fellowship with the
Department of Energy or any of its
National Laboratories? No

Availability

What is the earliest date you can
begin your internship? 5/23/2022

When do you need to complete your
internship? 8/15/2022

First Choice Host DOE Laboratory

DOE Laboratory: Fermi National Accelerator Laboratory (FNAL)

First Choice Research Area: Accelerator Physics/Science

Second Choice Research Area: Astronomy/Astrophysics

Third Choice Research Area: Cosmology

Second Choice Host DOE Laboratory

DOE Laboratory: Thomas Jefferson National Accelerator Facility (TJNAF)

First Choice Research Area: Accelerator Physics/Science

Second Choice Research Area: Nuclear Physics

Third Choice Research Area: High Energy Physics

Relatives Employed at DOE Laboratories

Are you a relative of an employee at
the proposed host DOE laboratories? No

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ESSAYS

Research Experience:

My most recent experience involving being a part of a research team is the one I am a part of now. Currently I am working for the Department of Mechanical and Nuclear Engineering at KSU alongside SMART Labs and Radiation Detection Technologies Inc. (RDT). The project we are working on is called Arganot, which is a Reconfigurable Wearable Device (RWD). The primary goal is to produce a small, gamma and neutron radiation detecting device that can be linked to a smart phone for easy access to radiation levels. At the time of joining the team, I entered when they were beginning testing. This means a lot of my responsibilities have been involving performing different forms of testing in order to collect data to relay onto other members of the team. This has given me a unique experience of not only being independent but also being a part of a team. For most of my assignments, I have been given instructions and/or goals and then left on my own to accomplish them. Then, after the assignment is completed, I am usually needed to communicate my findings to others in the team.

Another type of experience I have with working on a team on complex projects is during my time with the US Army Corps of Engineers. Like my experience with SMART Labs, I was tasked with individual responsibilities that were then relayed on to other members of the team working on the project. However, something that is different from my SMART Lab experience is the independence I was given. I had much more flexibility in accomplishing tasks that were assigned. A particular project where this was the case was when we had to clean the upstream side of the dam. The whole project involved dredging up debris from the turbine's intake, cleaning off the beach area created by the jetties, and clearing dead trees and other organic matter from the riprap. This, of course, was a big project that had to be delegated. My team was tasked with the riprap portion. All we were given was the instructions to clean it. The means, the operation and plan was all left to us to decide and come up with. This may sound trivial, but it involved coordinating with other teams to make sure the equipment we needed was available as well as being responsible for on-the-job problem solving when issues arose. I would say this project gave me the most experience with not only being independent while working in a team but also being able to improvise when things went wrong.

Research Interests:

The research subjects I have interest in all involve some form of physics. As a physics major, my goal for a career involves some type of research position. I am extremely passionate about learning and believe going into the research field will provide me an opportunity to always continue learning. The subjects I selected as a choice include accelerator physics, cosmology, astrophysics, high energy physics, and particles physics. I chose a wide array of options because I am not too certain on which one will fit my interest the best. At the moment, accelerator physics has piqued my interest the most because at this moment I would love working at a particle accelerator, such as Fermi Lab. The reason why this is at the top of my interest is because I understand the importance this area of physics is in understanding the fundamental workings of the universe. When the "why?" questions are asked, the answers seem to always insight more "whys" which lead us to looking deeper (a.k.a smaller). As a forever curious man, I can't think of a better sector of physics to go into. Simply because we can always ask more "whys" and narrow our focus smaller and smaller to the absolute fundamentals. All of this is why one of my choice host laboratories is Fermi Lab*. Again though, I want to emphasize that all of this is based on my current idea of what I think best suits me. It is for that reason I chose the other options. My reasoning for the other choices come from a similar source. Cosmology and Astrophysics also play a pivotal role in understanding the universe. Unlike particle physics however, the "whys" lead to more abstract ideas and metaphysical-esque questions. This also fascinates me because just like the universe, these questions are seemingly endless. As for high energy physics, I see this as a lovely marriage between the physics of the really big and really small. The factors that influenced my choices for my choice of host laboratories mostly come from the fact that Fermi Lab and Thomas Jefferson National Accelerator Facility have access to particle accelerators along with the choices for more diverse areas of physics. From what I've read about them, they both seem to be great candidates for providing me with invaluable experience along with helping me narrow down my interest to fit a potential future career.

*Also, it would be cool to work at a place where the Muon g-2 experiment is currently being ran

Personal Experience:

I believe my personal experiences will make me an excellent member to the program because through these experiences, I have learned and gained skills and a mindset that is able to adapt and persevere through almost any situation. Starting with my professional experience, my time spent at the US Army Corps of Engineers and with Smart Lab have most definitely helped me develop into a unique individual who's able to easily handle situations and tasks when needed to do so. Along with this, my additional past work experience helped me understand the importance of hard work and planning. A specific example is when I started a one-man landscaping company when I was 16. Because I was the only one, I was in charge of everything. From scheduling visits, to giving quotes, to writing and sending invoices, and most of all the work itself. I am very proud of this part of my life because of how versatile I needed to be and became. The skills I gained are far more than just labor related ones. These skills include time management, long and short term planning, communication skills, and one that is subtle yet important — understanding and acknowledging limitations. This escapade helped me develop skills that I am still able to transfer into my day-to-day life, so I am confident these skills will be an asset if selected.

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	<p>As for my academic experience, it can be summed up to choosing challenges and pushing to learn the most. In high school I chose to take five college classes— US History, US Government, Biology, Chem I and II, and Calc I and II. These classes did a great job in priming me for higher education, and teaching valuable studying skills which I still use now. Besides that obvious benefit, these classes also gave me experience in continuing to develop throughout the duration of a class. They taught me how an academic skill set is never static. It's always changing and developing.</p> <p>A part of my life experience is my tenacious drive to learn. I'm always going out of my way to know more. This is seen in how I spend my free time. I like to work on mathematical proofs and figuring out solutions to analytical problems. An example I am proud of is finding a way to determine the depth of a cylindrical hole based on four measured values. This aspect of me is what drove me to take part in the directed reading program here at KSU. I am currently learning about Lagrangian and Hamiltonian mechanics with the grad student I was paired with from this program.</p>
Professional Goals:	<p>At this moment in time my academic and professional goals involve going into research. As written about previously, I am passionate about learning and forever curious. A realization I had when starting college was that my years of broad and specialized education are coming to an end. This forced me to reflect on my goals and aspirations. I understand learning never ends; no matter the career, there will always be more to learn. However, the type of learning I enjoy is the learning that involves an active pursuit of knowledge and discovery. This desire, along with my interest in physics, made me realize that a future career in research is where I need to be. As for academic goals, I hope to get into grad school to earn at least a masters, if not doctorate. I understand the difficulties in accomplishing this and one of those difficulties is first getting into grad school. If selected to participate in the SULI program, the experience would propel me to my future goals, starting with raising my chances of getting into grad school. Participating in a program such as this would give me a real taste of what my prospective career would be like and help solidify my future plans/ideas. It would help me start learning skills that I could take on into my future, give me an idea of what interests me the most, and network within the academia community. Besides the skill set and experience this program would give me, it would also give me a unique mindset and outlook. I understand the individuals partaking in this program are some of the best in the country. I know being able to meet and talk to them, along with getting to know them over a 10 week period will help develop me as a person. A part of growing as a person is learning and knowing about other people. Since I would be immersed with people of similar interest and drive, I know that just being around them will help me grow and develop as a person, which in turn, will help me succeed at my future academic and professional goals.</p>

RECOMMENDATIONS

Recommendation 1:	<p>First Name: Brandi Last Name: Lohman Email: bcl6677@phys.ksu.edu Status: Received 1/10/2022</p>
Recommendation 2:	<p>First Name: Mike Last Name: Nuss Email: michael.y.nuss@usace.army.mil Status: Received 11/3/2021</p>
Recommendation 3:	<p>First Name: Robyn Last Name: Hutchins Email: rhutchins15@ksu.edu Status: Received 12/19/2021</p>

Report Results

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Wildcat ID 846259234

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Academic History View

Kansas State University

Name : Weston Timothy Schwartz

Student ID : 000920659

Birthdate : 

Print Date : 2021-10-29

- - - - - Academic Program History - - - - -

Program : AS Undergraduate Degree

2021-08-01 : Active in Program

2021-08-01 : Physics-BS Major

- - - - - External Degrees - - - - -

Yankton Senior High School

2020-05-31 High School Diploma

- - - - - Transfer Credits - - - - -

Transfer Credit from Mount Marty College

Applied Toward EN Undergraduate Degree Program

Course Trans GPA:	0.000	Transfer Totals :	22.00	22.00	0.000
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Fall 2020

COMM	106	Public Speaking 1	3.00	3.00 B	9.000
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ECON	110	Prin/Macroeconomics	3.00	3.00 B	9.000
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GRMN	101	German I	5.00	5.00 A	20.000
MATH	221	Analy Geom & Calc II	4.00	4.00 A	16.000
ME	101	Intro Mechanical Eng	2.00	2.00 A	8.000

Test Credits Applied Toward EN Undergraduate Degree Program

BIOL	198	Principles of Biology	4.00	4.00 EP	
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Test Trans GPA:	0.000	Transfer Totals :	0.00	4.00	0.000
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TERM GPA :	3.647	TERM TOTALS :	17.00	17.00	62.000
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CUM GPA :	3.647	CUM TOTALS :	17.00	43.00	62.000
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Spring 2021

ENGL	100	Expository Writing 1	3.00	3.00 B	9.000
MATH	222	Analy Geom & Calc 3	4.00	4.00 A	16.000
ME	212	Engineer Graphics	2.00	2.00 C	4.000
PHYS	213	Engineering Phys 1	5.00	5.00 B	15.000
CHE	354	Basic Concepts MS&E	1.00	1.00 D	1.000

TERM GPA :	3.000	TERM TOTALS :	15.00	15.00	45.000
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CUM GPA :	3.344	CUM TOTALS :	32.00	58.00	107.000
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Fall 2021

MATH	340	Elem Differential Eq	4.00		
MATH	551	Applied Matrix Thry	3.00		
NE	495	Elements Nucl Engg	3.00		
PHYS	214	Engineering Phys 2	5.00		

TERM GPA :	0.000	TERM TOTALS :	0.00	0.00	0.000
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CUM GPA :	3.344	CUM TOTALS :	32.00	58.00	107.000
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Undergraduate Career Totals

CUM GPA :	3.344	CUM TOTALS :	32.00	58.00	107.000
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SULI PROGRAM APPLICATION RECOMMENDATION FOR WESTON TIMOTHY SCHWARTZ

Recommender Contact Information

- **First Name:** Michael
- **Last Name:** Nuss
- **Title:** Supervisory Engineer
- **Department:** Operations Division
- **Institution/Organization:** US Army Corps of Engineers
- **Telephone:** 605-595-0082
- **Email:** michael.y.nuss@usace.army.mil

Applicant Information

Association

Describe your relationship to the applicant, including how long you've known the applicant, where, and in what capacity.

Weston has been a seasonal summer-hire at the USACE Gavins Point Project, which is located along the Missouri River near Yankton, SD. I have been his supervisor for the past two years during the summer months, and will again be his supervisor this Winter during his school's Winter break. Weston works as a laborer within the Outside Maintenance section and has proven to be a valuable team member.

Applicant Comments

Please provide substantive comments about the applicant's education, training, aptitude, or promise relevant to the SULI program. Include any relevant additional detail or perspective regarding the applicant's research experience or equivalent experience on complex projects, including the level of independence or other factors that would contribute to the applicant's ability to make an excellent contribution to the SULI program.

Weston currently is working on his bachelor's degree, of which he has mentioned interest in Physics, Nuclear Engineering, and Mechanical Engineering fields. His curriculum mirrors those interests, and he has maintained a high Grade Point Average. I know of his classwork but am not involved with it. What I can attest to, is that Weston's work ethic, his capacity to learn, and his attention to detail will stand him apart. He does not hastily finish tasks or take shortcuts for the sake of completion, but he takes the requisite time and effort to ensure an effective and accurate completion. This "right"-way-the-first-time approach translates well into research/STEM fields. Weston does not require remedial instruction once trained and he does not require repeat direction once tasked. I trust him to work independently, knowing that the end product will be timely and of high quality. He is inquisitive and shows great foresight, sets a strong example for other summer-hires. Weston has developed a great rapport with the permanent staff, works well with anyone, and has a positive attitude. His positive attitude, in my opinion, is an underrated quality. It is contagious, boosts morale, and brings enjoyment. I highly recommend Weston; he is hard-working and flat out dependable. Pick him up for your program.

Applicant Rating

In comparison to other undergraduate students, please rate the applicant relative to his/her peers on the following qualifications:

	Do Not Know	Below Average	Average	Above Average	Superior
Analytical and Mathematical				X	
Experimental Research	X				
Overall Academic				X	
Initiative and Self Reliance					X
Motivation toward Scientific Career				X	
Originality of Thought				X	
Emotional Maturity				X	
Ability to Work with Others					X
Potential for Leadership					X
Oral Communication Skills				X	
Written Communication Skills	X				

SULI PROGRAM APPLICATION RECOMMENDATION FOR WESTON TIMOTHY SCHWARTZ

Recommender Contact Information

- **First Name:** Robyn
- **Last Name:** Hutchins
- **Title:** Graduate Researcher, PhD student
- **Department:** Mechanical & Nuclear Engineering
- **Institution/Organization:** Kansas State University, Semiconductor Materials and Radiological Technology Laboratory
- **Telephone:** 913-608-6223
- **Email:** rhutchins15@ksu.edu

Applicant Information

Association

Describe your relationship to the applicant, including how long you've known the applicant, where, and in what capacity.

It would be my pleasure to recommend Weston Schwartz for the Science Undergraduate Laboratory Internship. I came to know Mr. Schwartz first as a friendly and highly motivated student enrolled in the Introduction of Nuclear Engineering course I was assistant teaching this past Fall semester at Kansas State University. From the beginning of the course, Mr. Schwartz was a top performer in a class of more than one hundred and fifty students. When I was looking to onboard motivated independent thinking undergraduate researchers in the Semiconductor Material And Radiation Technology (S.M.A.R.T) Laboratory, Mr. Schwartz was a clear and obvious choice. Once Mr. Schwartz was onboarded, he eagerly began working on one of our most important projects, a mobile compact radiation detection system known as ARGANOT (Area Radiation Gamma and Neutron Origin Telemetry system). Throughout the past semester, Mr. Schwartz has been reliable, motivated, and wanting to learn. Because of these qualities, I was more than willing to extend his employment into this coming Spring semester.

Applicant Comments

Please provide substantive comments about the applicant's education, training, aptitude, or promise relevant to the SULI program. Include any relevant additional detail or perspective regarding the applicant's research experience or equivalent experience on complex projects, including the level of independence or other factors that would contribute to the applicant's ability to make an excellent contribution to the SULI program.

As part of the ARGANOT project, Mr. Schwartz was tasked with characterizing the performance of both the gamma and neutron detectors within each module of the system. He safely and independently handles various radiation sources regularly and operates equipment such as environmental chambers to develop the data interpretation algorithms for field operation. Mr. Schwartz therefore became fluent in troubleshooting the system independently and worked well when needed with our industrial partner's (Radiation Detection Technology) engineering team to solve various problems. Much of the troubleshooting required Mr. Schwartz to deeply understand the operational physics of the detectors. His work led him to become familiar with basic principles of radiation detection and spectroscopy along with semiconductor microfabrication processes in a class 100 cleanroom.

In addition to Mr. Schwartz being able to safely and competently operate in a radiation and hazardous chemical laboratory, Mr. Schwartz has excellent organizational and logistical skills which he has repeatedly exhibited in maintaining and projecting the laboratory chemical inventory. I suspect that he learned these skills during his time working for the U.S. Army Corps of Engineers in which he was part of many projects, most of which require rigorous planning and strategic delegation. One notable example is when

he was tasked to lead a construction project for a storage system for industrial supplies. This project showcased Mr. Schwartz ability work with the team, find efficiencies, and manage his time effectively.

From the time I have known him, I have learned that he is an innately curious individual with a passion for science. He has expressed interest in attending graduate school to pursue a doctorate in physics with a specific interest in research. If selected for this internship, it would not only give him valuable academic and professional experience, but would also prepare him to enter a graduate program. Mr. Schwartz's combination being a joy to work work along with his passion, curiosity, experience and skillset, make him an excellent selection for this program.

Applicant Rating

In comparison to other undergraduate students, please rate the applicant relative to his/her peers on the following qualifications:

	Do Not Know	Below Average	Average	Above Average	Superior
Analytical and Mathematical				X	
Experimental Research					X
Overall Academic					X
Initiative and Self Reliance					X
Motivation toward Scientific Career					X
Originality of Thought					X
Emotional Maturity				X	
Ability to Work with Others					X
Potential for Leadership					X
Oral Communication Skills				X	
Written Communication Skills				X	