



TECHSOURCE[®]
A Science & Engineering Consultancy



Los Alamos
NATIONAL LABORATORY

WP-TNTSM

Weapons Production Technology & Nuclear Training

The NSE faces significant challenges in revitalizing U.S. plutonium pit production to meet the crucial target of producing 80 pits annually by 2030—a milestone essential to maintaining a reliable nuclear stockpile. Persistent production hurdles, outdated research facilities, overextended laboratory staff, and the complexities of small-scale, high-tech manufacturing have created costly and time-consuming obstacles that threaten efficiency and budgetary goals.

WP-TNTSM Delivering Results through Collaborative Action

To drive progress and support National Security Enterprise's (NSE) critical modernization mission objectives, TechSource experts partnered with Los Alamos National Laboratory (LANL)'s Associate Laboratory Directorate for Weapons Production-Technical Applications Office (ALDWP-TAO) to launch WP-TNTSM.

WP-TNTSM is a university Research and Development (R&D) and manufacturing integrated network designed to bridge the gap between the nuclear enterprise and the modern academic system. The program partners with universities, melding the minds of students and experts directly for real world projects. By harnessing this integrated network, WP-TNTSM offers groundbreaking approaches for innovation, research, and manufacturing. In addition, WP-TNTSM addresses critical challenges and supports NNSA's mission through scalable, forward-thinking strategies and solutions. By reducing costs and eliminating production bottlenecks, this forward-thinking approach drives efficient, on-time mission success while laying the groundwork for sustainable growth and impactful, long-term results.

Empowering Efficiency, Innovation, & Savings in Nuclear Operations

In partnership with universities, WP-TNTSM strengthens science and engineering programs, offering students exceptional research opportunities that directly support national security efforts. In addition, to bridge the gap between education and the National Security Enterprise's (NSE) workforce, TechSource fosters curriculum discussions and between national laboratories and academic institutions, ensuring alignment with current and future workforce needs focused on:

- Identifying gaps in existing curricula related to pit production and advanced manufacturing
- Assisting in the development and enhancement of specialized degree programs
- Coordinating discussions between industry experts and university leadership to refine educational offerings
- Supporting the integration of emerging manufacturing technologies into engineering and technical programs

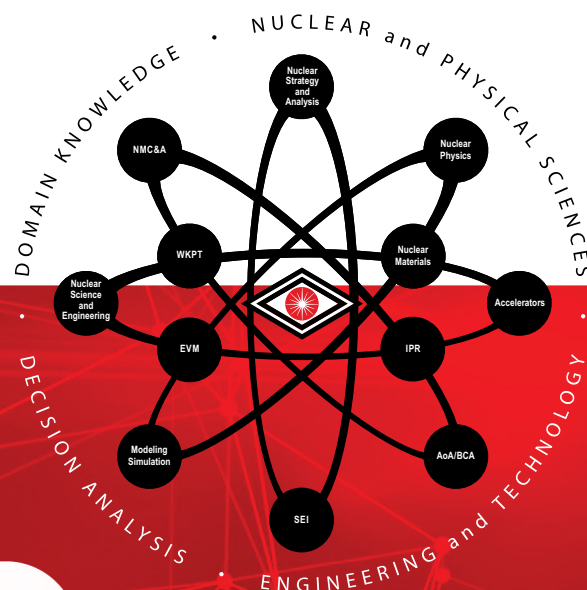
Universities with LANL



The University of Texas
Rio Grande Valley



ASU Arizona State University



Driving Progress Through Partnerships with STEM Students and Universities

- University Partners
- 23 Projects and 20 Capstones in Process
- 120 STEM Students Involved
- 41 Faculty & Researchers
- 95 Interviews, 45 Offers with 36 Hires
- 80% Offer Acceptance Rate
- 21 Cleared / 19 In Process

The Role of STEM Students and Universities in Driving R&D Success:

STEM students and universities play a critical role in driving innovation and advancing R&D. With their fresh perspectives, up-to-date knowledge, and enthusiasm for solving real-world challenges, students bring creativity and unique insights to technological problems. Universities, with their state-of-the-art resources and emphasis on interdisciplinary collaboration, create ideal environments for breakthroughs.

Through hands-on R&D projects, students gain practical experience, develop essential workforce skills, and help bridge R&D challenges facing the NSE. Their involvement not only leads to innovative solutions but also nurtures future leaders ready to address global challenges and push the boundaries of technology.

The Benefits of WP-TNTSM

Innovation and Creativity

STEM students bring an unfiltered perspective and a problem-solving mindset, fueled by their recent studies and enthusiasm for innovation. By engaging in R&D projects, universities cultivate a thriving culture of invention, where students contribute creative solutions and unique insights to technological challenges that may be overlooked.

Up-to-Date Knowledge

University students are frequently at the forefront of scientific and technological advancements. With access to the latest knowledge of academic developments, the students have a distinct advantage in industries where staying ahead of technological trends is essential.

Cross-Disciplinary Collaboration

Universities often emphasize interdisciplinary collaboration, encouraging students from a diverse array of STEM fields to work together. By uniting varied perspectives, R&D projects can develop solutions that tackle multiple dimensions of complex technological challenges.

Resource Availability

Universities boast state-of-the-art laboratories, cutting-edge research centers, and strong industry partnerships. With access to advanced equipment and the guidance of expert faculty, students are empowered to tackle challenges with fresh, unconventional perspectives.

Bridging the Gap Between Academia and Industry

Collaborating on R&D projects enables students and universities to forge valuable connections with industry professionals, bridging the gap between academic expertise and real-world industry demands. These partnerships ensure that solutions are not only cutting-edge, but also commercially viable. Students often contribute fresh, unconventional ideas that challenge traditional industry norms and drive progress.

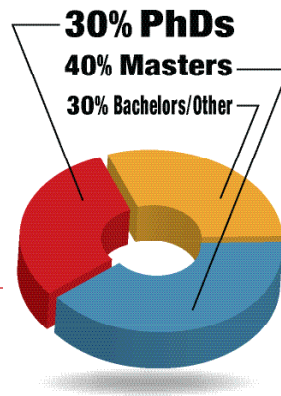
Talent Development and Workforce Readiness

Participating in R&D projects equips STEM students with essential skills such as critical thinking, problem-solving, and project management. These experiences not only enhance their competitiveness in the job market but also prepare them for careers in research, development, or entrepreneurship after graduation. Additionally, their contributions to R&D can result in innovative, patentable products, further boosting their professional potential.

We're the Go-To Experts for Experts

Science & Engineering Expertise

TechSource is a leading high-technology science and engineering consultancy offering recognized expertise in nuclear and physical sciences, engineering and technology, domain knowledge, and decision analysis.



Growth Mindset

R&D projects present unique challenges that demand resilience and perseverance. By confronting obstacles, students cultivate a growth mindset—an essential trait for navigating the ever-evolving world of technology.

Addressing Global Challenges

R&D projects often tackle critical societal and environmental challenges, from combating climate change to advancing healthcare and developing sustainable energy solutions. These pressing issues resonate deeply with many STEM students, whose passion and fresh perspectives can spark ideas that traditional research groups might overlook.

Knowledge Exchange

Universities serve as vibrant hubs for the exchange of ideas among students, faculty, and industry partners. This collaborative environment fosters diverse perspectives that challenge conventional thinking and pave the way for groundbreaking technologies and methodologies.

Involving STEM students and universities in R&D projects injects fresh perspectives, up-to-date expertise, and an energetic approach to problem-solving—key ingredients for advancing technology. This collaboration not only drives innovation but also cultivates the next generation of leaders in science and technology, equipping them to shape a future defined by meaningful and impactful progress.

Projects and Partnerships

LIBS is Laser Induced Breakdown Spectroscopy that is being used along with Robotics to perform precise measurements of a component in situ in a glovebox eliminating the need to bag out a sample of that component and transfer it to another area for measurement. This proof of concept at 2 universities is showing a potential to save LANL \$3–\$6 million in annual costs, produce less waste and reduce the risk of exposure and facility shutdown.

Radio Frequency Identification (RFID) is widely used in retail and logistics to track inventory in real time. The benefits to the Nuclear Mission, which are being evaluated by students at Auburn's RFID Lab who are participating in the WP-TNTSM Program, include better material accountability and reduced operator exposure to radiation. The projected savings are based on reducing the verification times for MC&A operators from hours to minutes and simultaneously distancing them from radiation dosages, which results in increased operator uptimes.

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