

FACILITIES AND OTHER RESOURCES

Delete these instructions and the footer before sending to Pre-Award as final document. Do not use the whole document. Choose only those sections that apply to your project and tailor it to your project. We recommend that you include the descriptions of the University of Arizona, University of Arizona Health Sciences, College of Nursing, and Office of Research & Scholarship; include the appropriate laboratories if relevant. Also, then add information on performance sites and add other resources you will use throughout the University.

The University of Arizona

The University of Arizona is a large and diverse land grant Research 1 educational institution. The mission of the University of Arizona is to continuously improve how they educate and innovate so they can lead the way in developing adaptive problem-solvers capable of tackling our greatest challenges. Core values include integrity, compassion, exploration, adaptation, inclusion, and determination.

The University of Arizona (UA) is a premier, public research university. The National Science Foundation ranks the university in the top 4% of all U.S. universities in research and development expenditures with ranking of number 20 among public institutions and number 37 overall. The university tied for number 58 among public universities in the U.S. News & World Report's Best College 2024 rankings and tied for number 115 among all universities, public and private. In addition, the UA was ranked number 29 among the top 100 worldwide universities granted utility patents in 2022 according to the National Academy of Inventors with the university ranking 23rd among U.S. institutions and 13th among U.S. public universities.

In 2018, the University of Arizona earned the designation of Hispanic-Serving Institution (HSI) from the U.S. Department of Education for its success in the enrollment of Hispanic students. The Higher Education Research and Development (HERD) survey ranked the university number 3 among schools with high Hispanic enrollment. In the U.S. News & World Report's Best College 2024 rankings, the university is number 14 among all colleges and universities that are designated as Hispanic-Serving Institutions and number 25 among state flagship universities.

We respectfully acknowledge the University of Arizona is on the land and territories of Indigenous peoples. Today, Arizona is home to 22 federally recognized tribes, with Tucson being home to the O'odham and the Yaqui. Committed to diversity and inclusion, the University strives to build sustainable relationships with sovereign Native Nations and Indigenous communities through education offerings, partnerships, and community service.

University of Arizona Health Sciences

The University of Arizona Health Sciences (UAHS) is the statewide leader in biomedical research and health-professions training. Its network of health-related organizations reaches across the state of Arizona and beyond to provide critically needed, highly specialized health and medical training and outreach services to Arizona's major cities, towns, Native American reservations, and its most remote communities. Its mission is to improve health and human potential by educating the next generation of health care professionals, investigating and solving critical health care problems, providing compassionate and culturally sensitive care, and building healthier communities for all. With a multidisciplinary, collaborative plan for growth, UAHS concentrates on four areas of research excellence: Health Disparities/Equity, Population Health and Health Outcomes, Precision Health, and Neuroscience.

The UAHS is one of the top-ranked academic medical centers in the southwestern United States, garnering more than \$400 million in research grants and contracts annually. It is focused on five vitally important health care initiatives: Next-Generation Education, Precision Health Care for All, Innovations in Healthy Aging, Creating Defenses Against Disease, and New Frontiers for Better Health. University of Arizona Health Sciences comprises the College of Health Sciences, College of Medicine – Phoenix, College of Medicine – Tucson, College of Nursing, R. Ken Coit College of Pharmacy, and Mel and Enid Zuckerman College of Public Health. Additionally, 15 centers are dedicated to excellence in cancer, neurodegenerative and respiratory diseases, pandemic preparedness, precision health care, and pain and addiction. UAHS employs has approximately 900 faculty members and 6,700 students on campuses in Tucson, Phoenix and Gilbert, Arizona.

Research Administration. Research Administration provides compliant support and education for the research teams and faculty in the health sciences colleges, research institutes, and centers of the UAHS. In

collaboration with their medical partners and university stakeholders, this team works directly with the faculty, staff, graduate and medical students, and post-doctoral trainees to find grant opportunities, prepare and route grant proposals for submission to external agencies, determine billing compliance, develop and negotiate clinical trial budgets, manage clinical trial finances and billing, negotiate and endorse contracts, provide regulatory support and guidance, develop and publish research data reports, and manage a clinical trial tracking and reporting system. They value excellence and uphold the highest levels of integrity, collaboration, service, innovation, leadership, and subject matter expertise. They work diligently to ensure that they continue to sustain and grow the research enterprise.

Research Administration supports submission preparation for grants and other research activities. This includes review of grant application announcements for requirements and applicability; budget development and drafting budget justifications; communication with prime or subaward institutions; preparing the grant application; assisting with administrative sections of grants including letters of support, biosketches, facilities and resources; routing and securing institutional approval, endorsements, and signatures; and submission of the grant to external sponsor and communication with sponsors.

OnCore Online Collaborative Research Environment (OnCore) is a comprehensive, Web-based Clinical Trial Management System (CTMS) used to manage clinical research involving human subjects. It was developed to support investigators and research coordinators as a centralized place to manage all their study protocols and subjects. It is also a tool to create a portfolio of active research studies by UAHS faculty. All clinical research studies involving human subjects within UAHS should be entered into OnCore.

College of Nursing

Established in 1957, the University of Arizona College of Nursing has been transforming nursing education, research and practice to help people build better futures for more than 60 years. Consistently ranked among the best programs in the nation, the college is strengthening health care's largest workforce and the public's most trusted profession through its undergraduate and graduate programs, offered online and on-campus in Tucson, Phoenix and Gilbert, Arizona. With headquarters in Tucson, where integrative health has been pioneered, the College of Nursing is home to the only Bachelor of Science in Nursing (BSN) degree with an integrative health focus in the country. With key focal strengths in integrative health, cancer prevention and survivorship, and nursing informatics, the college has more than 7,000 alumni worldwide promoting health and wellness in their workplaces and communities.

The College of Nursing is one of twenty-one colleges at the University of Arizona and one of the colleges comprising the University of Arizona Health Sciences. The mission of the College of Nursing is to innovate nursing and interdisciplinary education, practice, research, and service to develop leaders, address healthcare challenges, and promote health, equity, and inclusiveness. Its vision is to lead the advancement of nursing for transforming healthcare in their community, the State of Arizona, and the world. Its collective research expertise in population and community health, prevention and health promotion, and systems and models of care give focus to research efforts and allow them to develop new knowledge and strategies to improve health, healthcare, and health equity and is well aligned with national nursing science priorities for advancing population health.

Faculty conduct research to develop new modes, methods, and models for improving health and well-being in Arizona communities and across the globe. Their researchers work throughout the healthcare industry on a broad spectrum of issues, and their discoveries are needed now, more than ever. The renowned faculty are changing the delivery of healthcare, preventing disease, and enhancing the nursing workforce through innovative research focused on achieving health equity. Students can find opportunities to customize their educational journey around a topic or idea that excites them. Working with faculty, students will develop a passion for discovery that will last their entire professional career.

The College conducts its mission by preparing professional nurses who function in various roles related to advancing human health in meeting the health care needs of the people of Arizona and society in general by fostering and sustaining programs of research and scholarship directed toward advancing nursing science and by providing leadership in professional and health-related activities. Faculty work at the cutting edge of health science with expertise in a range of interests from chronic disease to environmental factors, interventions and many others. They are constantly pushing the boundaries of what is known in the field to innovate new methods and understanding to improve the quality of healthcare around the world.

The College of Nursing is currently ranked among the top 15% of graduate nursing programs in the

United States and is accredited by the Commission on Collegiate Nursing Education (CCNE). It is ranked in the 13th position among public universities and the 19th position overall among nursing schools in National Institutes of Health (NIH) funding, as reported by the Blue Ridge Institute for Medical Research in 2024. In Doctor of Nursing Practice programs, the College of Nursing ranked number 10 among public universities and number 19 overall and in master's programs, it is ranked at number 30 overall and number 19 among public universities in the 2024 U.S. News & World Report's Best Nursing Schools list. The College of Nursing is the fourth nursing school in the United States and the first in Arizona to become a Hispanic-Serving Health Professions School member. Membership is granted to schools with a demonstrated commitment to increasing the Hispanic workforce that will serve and promote the health of Hispanics, as evidenced by programs, activities, and student and faculty diversity.

The faculty have office space within the College of Nursing that is equipped with computer (internet connected) and file storage. There is convenient access to printer/copier machines with complete in-house Information Technology support. The College of Nursing has laboratories consisting of four facilities: Biological Sciences Laboratory, Behavioral/Applied Clinical Sciences Laboratory, Brain Digital Technology Laboratory, and the Collaboratory for Health and Technology. These facilities include space and equipment for faculty and graduate students to conduct human biobehavioral research.

Biological Core Laboratory. The Biological Core Laboratory is a Biosafety Level-2 (BSL-2) facility that consists of 1834 square feet of individual laboratories and workstations, which in combination accommodate multiple faculty and graduate students who are conducting individual or collaborative research projects. The Biological Core Laboratory includes dedicated space for biochemistry, cell culture, histology, genetics, and molecular biology assessments.

For molecular biology the lab is equipped with 2 D electrophoresis, SDS-PAGE and agarose gel electrophoresis of nucleic acids. Electrophoretic trans-blotting equipment is available for protein and nucleic acid blotting. Imaging these blots can be done on the UVP ChemiDoc-IT² Imager and analyzed using VisionWorks LS software. Polymerase Chain Reaction (PCR) and quantitative PCR are supported by an Applied Biosystems 2720 thermal cycler and an Applied Biosystems Quant Studio 5 Real Time Polymerase Chain Reaction (rtPCR) instrument. An ESCO PCR-3A2 workstation is available for PCR set up and for other reactions that require isolation to prevent environmental contamination. This laboratory also has available a VWR 1162A heating/cooling recirculating waterbath for incubations and an Eppendorf 5415D high-speed microcentrifuge. It contains refrigerators for sample and chemical fixative storage. There is a computer-driven Tecan plate reader that is used for ELISAs and other plate-based assays that employ wavelength detection methods. Gas and vacuum lines are available and there is adequate shelf and cabinet space for storage of the necessary supplies and accessories.

For cell culture, the lab is equipped with two Forma Scientific Model 3158 Single Chamber Automatic CO₂ control Water-Jacketed incubators and a Forma Scientific Class II, Type A Console Model 1100 Laminar Flow Hood. A Coulter/Beckman Zf1 electronic cell counter, VirSonic 100 ultrasonic cell disrupter, VWR CryoPro BR-1 liquid nitrogen dewar and a NAPCO model 9000-P electric autoclave are available. The laboratory is equipped with centrally supplied gas, water, and vacuum lines along with bench top workspace, storage cabinets and a chemical resistant sink.

A Perkin Elmer Envision Xcite Multilabel Plate Reader is configured to enable the performance of amplified luminescent proximity-based homogeneous immunoassays (Perkin-Elmer AlphaLISA) for which validated kits are available. Assay sensitivities range from low picogram/ml to sub-picogram/ml of analyte, while using only 5-10 µl of sample. This is much less than the 25-100 µl required for most standard immunoassays. In addition, the dynamic range of measurement of this instrument is 4-5 logs in comparison to 2 logs for standard instruments and assays, alleviating the need for sample re-assay (and sample wastage) when measurements are out of range. A wide dynamic range is clearly a major advantage when sample volumes are limited and each sample is irreplaceable. The Perkin Elmer Envision Xcite Multilabel Plate Reader is also capable of highly sensitive luminescence measurements (both flash and glow). In addition, the instrument supports time-resolved fluorescence assays (Perkin Elmer DELFIA) and time-resolved fluorescence-fluorescence resonant energy transfer assays (Perkin Elmer LANCE). Such assays require very small samples, are more sensitive and have a wider dynamic range than other standard biochemical methods. Importantly, many manufacturers produce a wide variety of validated assay kits using these methodologies and assay components that may be purchased for the development of unique assays.

For genetics outcomes, the lab is equipped with a Nova Biomedical Stat Profile Critical Care Xpress for measurement of blood gases and electrolytes, Fisher Scientific AccuSpin 17R Centrifuge, Fisher Scientific Isotemp 215 waterbath, Fisher Scientific Power Gen 35 handheld homogenizer, ThermoScientific Nanodrop 2000c spectrophotometer for the measurement of DNA and RNA concentrations in small (1-2 μ l) sample volumes and an Eppendorf Vapoprotect Mastercycler for polymerase chain reactions (PCR). Gas and vacuum lines are available as well as shelf and cabinet space for storage of supplies.

The lab is also generally equipped with chemical resistant work benches, a fume hood, Millipore water purification system, ice maker, pH meter, vacuum pumps, glassware, and chemicals. The laboratory is equipped with centrally supplied gas, water, and vacuum lines. In addition, there is a safety shower and eye wash station.

A large, shared space containing multi-user equipment is located in the Biological Core Laboratory. This area contains tabletop counter space, Savant DNA Speed-Vac, VMR hot plate, VMR shaker, Millipore water purification system, Labline oven, ThermoFisher, and a tabletop Heraeus 400R refrigerated centrifuge with a swinging-bucket rotor and bucket caps for centrifugation of biological samples. Another rotor is available for centrifugation of PCR plates. A Justrite flammable liquid storage cabinet (60-gallon capacity) is present as well. There is also a Millipore MAGPIX instrumentation system utilizing Luminex technology, combined with the MILLIPLEX magnetic bead-based multi-analyte panels and analysis software which provides for rapid, accurate biomarker quantification. A BioTek ELx405 plate washer with magnetic plate is available for use with the MAGPIX. For general liquid handling or PCR setup, there is an Eppendorf epMotion P5073 system to completely automate routine pipetting. This system has optical sensors, six deck positions for tips, trays and tubes, two exchangeable pipetting tool positions and is controlled by epBlue software using a touch control pad. The P5073 is enclosed in a Misonix Aura 30 Class I cabinet with HEPA filter to ensure safe handling of any biohazardous liquids. In addition, the TomTec Quadra Tower Model 400 is a 96-channel robotic pipettor that is capable of simultaneously drawing up 96 individual portions (10-450 μ l) from one 96-well microplate, and then simultaneously dispensing to another 96-well microplate. The Tower is especially useful for procedures that require very rapid loading of 96-well plates, such as assay systems that are subject to a signal shift that results from the lag time between loading wells on a plate. A sink and eye wash station is also available. Additional bench space with electrical outlets, gas and vacuum lines is available. This area contains a large table and chairs. A separate room adjacent to the Biological Core Laboratories is equipped with a So-Low Ultra Low -80°C freezer (25 cubic ft), a Revco Ultima Plus -80°C freezer, a Fisher Scientific Flammable Materials -20°C storage freezer (10 gal. capacity), and several refrigerators.

Behavioral/Applied Clinical Sciences Laboratory. The Behavioral/Applied Clinical Sciences Laboratory consists of 1585 square feet of designated space for faculty and graduate students to conduct clinical research involving human subjects. A large, state of the art conference room is available for group meetings and conferences. The laboratory includes a clinical measurement room to conduct research protocols, as well as offices for research staff, a room with twelve computer stations, and a room with six computer stations. A waiting area for study participants is also available.

Brain Digital Technology Laboratory. The Brain Digital Technology Laboratory, consisting of 444 square feet of designated space, serves as a nexus of multidisciplinary inquiry, encompassing domains such as nursing, engineering, neuroscience, mental health, statistics, and data science. The ultimate goal of the Brain Digital Technology Laboratory is to continue to develop the best strategies to reduce the pain of people and improve their quality of life using technology. The mission of the laboratory is to prevent, ameliorate, and manage pain in a nonpharmacological approach on the use of brain stimulation. Researchers will accomplish this through research, discovery, education, and outreach in the community.

This cutting-edge facility pioneers research at the intersection of brain stimulation and computational technology, with a primary objective of refining pain and symptom management methodologies. Employing innovative techniques such as transcranial direct current stimulation (tDCS), the laboratory underscores its commitment to advancing nonpharmacological paradigms in pain care, exemplifying a holistic and technologically-driven approach. The Brain Digital Technology Laboratory has ten Soterix 1x1 tDCS mini-CT Stimulator devices (Soterix Medical Inc., NY), Thermo Scientific ARCTIC A25 Refrigerated Circulator, Shimadzu LIGHTNIRS Functional Near-Infrared Spectroscopy (LIGHTNIRS, Shimadzu, Kyoto, Japan), and four laptop computers (DELL latitude). This laboratory also has fully equipped quantitative sensory testing unit,

including Medoc TSA2 Advanced Thermosensory Stimulator, handheld digital pressure algometer (Force Ten FDX compact digital force gauge, Wagner Instruments, Greenwich, CT), and a refrigeration unit (Fisher Scientific, Hampton, NH).

The Collaboratory for Health and Technology (CHaT). The Collaboratory for Health and Technology (CHaT) is a robust, real-time partnership between the College of Nursing, the College of Engineering, and industry partners informed by the unique perspectives of nursing and engineering to identify healthcare challenges, craft and enhance solutions, evaluate outcomes, and make well-informed decisions, all aimed at enhancing health equity. The CHaT focuses on the development, evaluation, and implementation of technology-enhanced interventions to improve the reach of evidence-based interventions.

The mission of the CHaT is to harness the unique perspectives of nurses and engineers to design innovative solutions to pressing healthcare challenges, develop interdisciplinary educational and research partnerships to foster creative collaborations between nurses and engineers, and create the next generation of healthcare leaders at the intersection of nursing and engineering to focus on improving health equity. The goals of the CHaT are: 1) Development and learning by bringing nursing and engineering faculty and students together to explore the combination of evidence-based interventions and digital technologies, machine learning (ML)/artificial intelligence (AI), and big data to improve health equity and the provision of healthcare; 2) Research by facilitating nursing and engineering partnerships to apply technology to solve real-world health problems through pilot funding and mentored research experiences; 3) Workforce development through undergraduate and graduate dual degree programs and a postdoctoral fellowship program that will prepare students and fellows to conduct health equity research and lead healthcare transformation; and 4) Dissemination by engaging with communities and partnering with industry to identify healthcare needs and disseminate scalable, accessible solutions.

The Collaboratory for Health and Technology building uses its state-of-the-art facilities for teaching, learning, and research. The existing test beds, sensor lab, offices, shared meeting spaces, and research areas in UAHS, College of Nursing, and College of Engineering facilitate creative collaborations between nursing and engineering faculty, students, and staff. The test beds and sensor lab provide space for testing technology-enhanced interventions in healthcare and home settings. These spaces enable innovative research and development in microsensors, microdevices, ML/AI, and big data solutions to healthcare challenges. These spaces are able to simulate inpatient hospital, long-term care, assisted living, and home environments, and are equipped with wearables, sensors, electronic test equipment, 3D printers, and more. Offices, research space, conference room space and other core scientific and educational facilities are available through the UAHS, Colleges of Nursing and Engineering to facilitate collaboration.

Office of Research & Scholarship. The Office of Research & Scholarship facilitates the scholarly endeavors of the scientific community of faculty and student researchers and formalizes the College of Nursing faculty's commitment to research as a major responsibility of the profession and provides the environment for faculty and students to be productive. The mission of the Office of Research & Scholarship is to support research and scholarship among faculty and students in the College of Nursing. It provides support to tenure track, career track, research faculty, and graduate students to facilitate both research and scholarship activities.

The personnel in the Office of Research & Scholarship provide help to clinical faculty that includes poster and presentation development, writing resources, networking/collaboration assistance, institutional review board (IRB) support, and more. The office provides assistance to all faculty conducting research from pilot to dissemination projects including profiling funding opportunities, research career counseling, proposal development, IRB support, proposal reviews, collaborative think tanks, access to internal seed money, statistical and database support, and more. The Office of Research & Scholarship occupies 1153 square feet of space in the College of Nursing.

Services offered by the office include: 1) career development and scholarly productivity through mentoring for research program development, peer review of proposals and manuscripts, seminars and workshops on timely research topics, and interdisciplinary forums for the exchange of ideas among researchers and students; 2) post-award support with reporting and other management requirements as well as with the development of data management systems and consultation with online survey design and management; 3) statistical support; 4) coordination of human subjects protection requirements; 5) coordination of the laboratories; and 6) administration of intramural research funds.

Office of Learning and Healthcare Technology Innovations. The mission of the Office of Learning and Healthcare Technology Innovations (LHTI) is to facilitate the academic teaching/learning, healthcare practice, research, and service goals of faculty, staff, and students through the innovative use of emerging technologies. LHTI leads and facilitates the development of innovative technologies to enhance the learning experience, application and utilization of academic and clinical data systems and the health-care delivery experience. The Office provides a wide variety of services that support the instructional, research, practice, and service missions of the College of Nursing.

The LHTI team has extensive experience with software development and training and technology support. LHTI sustains the overall information systems architecture of the College as well as manages an increasing portfolio of cloud-based services. LHTI provides training and development to empower faculty, staff, and students to get the most out of an increasingly complex array of technology solutions.

LHTI provides information technology support services to faculty, staff, and trainees. The Director of IT leads a team of five (5) information technology professionals who support innovative technology solutions, such as integrating Zoom with technology that facilitates synchronous online course sessions and breakout groups as well as supporting the integration of virtual technologies into the curriculum through the creation of two XRStudios for the College, one in Tucson and one at the Gilbert campus. By using virtual reality (VR) applications such as Embodied Labs, LHTI helps deliver meaningful virtual clinical experiences that students may not get in traditional clinical training environments.