

UT Tyler Institute for Sterile Compounding and Advanced Therapeutics

Facility and equipment planning brief | Revised 16 October 2026

Decision for schematic planning: include a nonclassified 25-station teaching lab, a functional cleanroom suite with three six-foot LAFWs and three BSCs, and production studios for professional education. Add one instructor LAFW beyond the 25 individual four-foot teaching units. The six cleanroom cabinets are additional to the 26 teaching-lab cabinets. Verify cabinet models, room sizes, and studio systems through programming and engineering.

Purpose and scope

The 25-learner lab serves PharmD cohorts and foundational skills. The cleanroom suite is an initial-phase element for advanced practitioner education, competency assessment, practice research, environmental monitoring, and realistic exercises. Studios allow live and recorded demonstration, remote preparation, debriefing, and regional professional education. Design the cleanroom to be built, commissioned, certified, and maintained as a working suite. Patient-use production or external distribution requires a distinct approved operating model, licenses, quality system, personnel, and oversight.

Required teaching lab program

Element	Schematic requirement
Student workstations	25 separate nominal four-foot horizontal LAFWs. No two-student sharing of a six-foot cabinet. Allow a cabinet for every simultaneous learner.
Instructor station	One demonstration LAFW beyond the 25 student stations, preferably with high-quality overhead and side camera views.
Room environment	Nonclassified instructional room with coordinated supply and return air, low-disruption diffusers, controls for noise and heat, and cabinet-specific service access. Do not represent the room as an ISO-classified cleanroom.
Learning and assessment	Clear observation paths, video capture at selected or all stations, instructor display, task lighting, accessible work positions, and secure assessment recording as appropriate.
Support	Adjacent supplies and preparation, hand hygiene and garbing practice, staging and reset, media-fill incubation and reading, waste, and equipment storage. Keep these functions out of the 25 work zones.
Boundary	Horizontal airflow provides product protection for nonhazardous exercises. Teach hazardous-drug techniques using separate suitable containment equipment and simulated materials.

Area and layout allowance

Carry 2,200–3,000 net square feet for the 25-station lab as an early, unverified planning allowance, plus separate support and classroom areas. This is a schematic placeholder, not a final requirement. For

reference, 25 NuAire four-foot units at 50 inches outside width occupy about 104 linear feet of cabinet frontage before spacing. Germfree Z400 units are listed at 48 inches outside width, or 100 linear feet for 25. A five-by-five arrangement is a test layout, not a prescribed design. Resolve clear access, instructor reach, accessible positions, egress, sightlines, acoustic performance, cleaning, service, ceiling height, and electrical routing with the actual selected units. [1, 2]

The prior early-core concept used a 12,000–16,500 NSF planning envelope. Rebaseline it with the 25-station lab, six-cabinet cleanroom suite, and studio/control rooms; the earlier figure is not validated for this scope. Advance room-by-room net and gross area, equipment footprints, service corridors, HVAC/exhaust loads, and AV infrastructure before assigning a new total. Advanced therapy, radiopharmacy, and cyclotron options remain separately gated.

Functional cleanroom suite required in the initial phase

Provide distinct classified rooms for nonhazardous and hazardous sterile workflows. The schematic arrangement below is a planning basis, not a final compliance determination. Engage a sterile-compounding architect, MEP engineer, certifier, and the intended operator before fixing room relationships or cabinet models. USP <800> identifies separate rooms for sterile hazardous and nonhazardous compounding and external venting for sterile hazardous-drug containment cabinets. [7]

Space or system	Schematic requirement
Nonhazardous buffer room	ISO Class 7 planning basis with three six-foot horizontal LAFWs, ISO Class 5 work zones, positive pressure relationship, adequate cabinet spacing, service access, and observation. No hazardous-drug activity in these LAFWs.
Hazardous buffer room	Separate ISO Class 7 negative-pressure, externally vented containment room with three Class II BSCs suitable for sterile hazardous-drug work. Specify cabinet width/type and external exhaust interface after workflow and engineering review. Use nonhazardous simulants for teaching until an approved hazardous-drug program is in place.
Ante and transition	Classified ante/garbing, hand hygiene, material transfer, and decontamination arrangements sized for actual trainee and instructor flow. If one ante room serves the hazardous buffer, evaluate its required ISO classification and pressure cascade with the designer.
Infrastructure and operations	Dedicated HVAC and exhaust capacity, pressure and environmental monitoring, alarms, electrical resilience, cleanable finishes, pass-throughs as justified, certification access, supplies, waste, incubators, and space for cleaning and maintenance.
Commissioning	Design qualification and installed-operation testing; initial and recurring room and cabinet certification, environmental monitoring, cleaning, gowning, media-fill and competency programs, and named operational responsibility.

The three six-foot hoods support advanced small-group work and complex workflows. They do not replace the 25 independent student workstations. The three BSCs support contained techniques and hazardous-drug simulation, with actual hazardous material use subject to a separate safety and operating plan.

Practitioner education and studios

Build an advanced compounding program for practicing pharmacists and pharmacy technicians with short preparatory modules, live or recorded expert demonstrations, supervised cleanroom exercises, individual competency assessment, and case-based debriefing. Examples include workflow design, first-air and containment decisions, gowning, aseptic manipulation, environmental monitoring, media-fill interpretation, and troubleshooting. Develop continuing education accreditation or joint providership as a separate program task; do not advertise credit until approved.

Include an adjacent demonstration studio with cleanable overhead and oblique camera views, instructor audio, lighting, live switching/recording, and controlled displays in teaching and observation spaces. Provide a small control/editing room and a content workflow for captions, case materials, secure assessment footage, and remote participants. Plan fixed camera positions and serviceable penetrations with the cleanroom designer. The studio extends demonstrations and discussion beyond Tyler; hands-on competency still requires direct observation or a validated assessment method.

Operating and funding goals

Financial sustainability is a design requirement. The operating goal is to cover attributable staffing, teaching supplies, cleanroom utilities and consumables, certification, maintenance, digital systems, university overhead, and a replacement reserve through a diversified mix of earned income, allowable research cost recovery, and dependable philanthropic support.

Fund initial construction and major equipment through an identified capital plan. Operating break-even, full lifecycle cost recovery, and repayment of capital are distinct milestones. No break-even date, price, enrollment forecast, grant award, or return is established by this concept.

Build the recurring base around hospital and health-system partnerships, advanced practitioner education, assessment and remediation, train-the-trainer programs, and institutional digital licenses. Stage consulting and research against staff capacity. Research grants are restricted project support; donated equipment is a reduction in capital cost, not annual operating cash.

Research should begin with training transfer and retention, hazardous-drug exposure prevention, or equipment placement and human factors. Fund studies through appropriately scoped foundation, hospital, industry, or government support; no award is assumed in the operating baseline.

Equipment basis and procurement test

- Baseline: nominal four-foot horizontal LAFW, ISO Class 5 work zone, nonhazardous use, 115/120 V configuration where available, cleanable work surface, IV bar, visible airflow status/alarm, documented certification access, and service support.
- Mock up the proposed four-foot unit using representative vial, syringe, IV-bag, media-fill, camera, scale, waste, and documentation exercises. Score usable space, first-air visibility, student posture, instructor observation, and cleaning.
- Ask vendors for a 25-unit and an instructor-unit quote that separates cabinets, stands, IV bars, shipping, installation, certification, filters, service, warranty, and multi-unit discount. Obtain current cut sheets, BIM/CAD, acoustic and heat data, power requirements, top-intake and filter replacement clearances.
- Request a pilot installation of two units for hands-on review before finalizing the room or issuing a bulk purchase order.

Current manufacturer comparison

Manufacturer-published information reviewed 15 October 2026. A blank specification means that the current public product page did not establish a directly comparable value; request it in the formal proposal. ISO classes describe cabinet work-zone air, not the surrounding teaching room.

Candidate	Verified fit and features	Open decision points
NuAire AireGard NU-240 four-foot	50 in W × 32 in D; about 47 7/8 in work width and 19 5/8 in work depth; ISO 5; stainless work zone; AeroMax status/alarm; optional IV bar and outlets; 115 V option. [1]	IV bar/stand/outlets must be specified; assess 19 5/8 in depth with camera/scale; confirm exact model, heat, sound, and service clearances.
Germfree Z400	48 in W × 32 in D; 47 in work width and 20 in depth (22 in including armrest); ISO 5; all-304 stainless; IV bar standard; outlets and sealed data ports standard; 120 V, 15 A circuit. [2]	At 1,200 BTU/h listed heat per cabinet, 25 units imply 30,000 BTU/h cabinet heat before people/lighting; engineer HVAC. Verify outlet loading, service and sound.
Baker EdgeGARD Rx EG401Rx	Four-foot pharmacy-specific model; ISO 5; 316 stainless interior, coved/dished surfaces, digital pressure gauge, IV bar and cable pass-throughs. Newly introduced in 2026. [3]	Obtain model cut sheet, outside/work dimensions, electrical, heat, sound, price and field-service terms. Evaluate cleaning and sightlines in mockup.
Labconco Nexus four-foot	Four-foot horizontal bench for nonhazardous work; ISO 4 claimed work zone; glass sides, 21 or 26 in interior depth, optional 304 stainless interior, touchscreen logs, Ethernet/USB, and five-year warranty. [4]	Specify exact SKU and stand; assess whether electronics improve education enough to justify cost and upkeep; confirm envelope, power and noise.
Esco Airstream Gen 3 LHG or LHS four-foot	Four-foot glass-side and stainless-side versions with 115 V options, multiple interior heights, optional front covers and accessories. [5]	Confirm US pharmacy configuration, precise dimensions, cleaning materials, IV bar, service network, alarms and warranty in a proposal.

Shortlist and provisional recommendation

Invite NuAire, Germfree, Baker, and Labconco to submit comparable four-foot configurations. Include Esco if its local service and pharmacy configuration meet the same requirements. Germfree and NuAire have the clearest published footprint and utility inputs for early layout. Baker's new Rx configuration deserves a mockup because its pharmacy-specific construction could be well suited to repeated instruction and cleaning. Labconco offers a deeper work-area option and useful digital logs. No manufacturer is selected; quotes and hands-on testing should decide.

An integrated workflow hood such as Germfree Smarthood is better evaluated as one advanced demonstration or research station. Its four-foot work area comes in a 62-inch-wide unit with integrated computer, camera, scanner and printer, so using it for all 25 learners would materially enlarge the lab and capital scope. [6]

Project decisions and next actions

Action	Deliverable
1. Educational mockup	Score the same five representative exercises in the proposed four-foot cabinet. Confirm usable workspace and equipment configuration for all 25 positions.
2. Scaled room test	Architect and MEP engineer develop 25-station layouts and a separate three-LAFW/three-BSC cleanroom block plan with personnel and material flows, pressure cascade, exhaust, electrical and service schedules.
3. Competitive requests	Request comparable five-year offers for the 25 plus one teaching cabinets and a distinct cleanroom cabinet package. Vendors may propose for either or both; avoid tying an equipment gift to sole-source future purchases.
4. Program reconciliation	Rebaseline the core room schedule and capital model for teaching lab, functioning cleanroom, studios, AV production, commissioning, certification, faculty and technical operations.

Manufacturer sources

[1] NuAire, AireGard NU-240 Horizontal Laminar Airflow Workstation, <https://www.nuaire.com/products/laminar-airflow-workstations/horizontal/airegard-nu-240-horizontal-laminar-flow-hood>

[2] Germfree, Z-Series Horizontal Laminar Flow Hood, <https://www.germfree.com/equipment/horizontal-laminar-flow-hood/>

[3] Baker, EdgeGARD Rx and Baker Rx portfolio, <https://bakerco.com/product/edgegard-rx/> and <https://bakerco.com/baker-rx-pharmacy-compounding-cabinets/>

[4] Labconco, Nexus Horizontal Clean Benches, <https://www.labconco.com/p/nexus-horizontal-clean-benches-3-4>

[5] Esco, Airstream Gen 3 Horizontal Laminar Flow Cabinet, <https://www.escolifesciences.com/products/laminar-flow-cabinet/airstream-gen-3-horizontal-laminar-flow-cabinet>

[6] Germfree, Smarthood, <https://www.germfree.com/equipment/smarthood/>

[7] USP, General Chapter <800> FAQs (January 2026), https://pages.usp.org/rs/711-SXF-172/images/USP_HQS_800_FAQs_January2026.pdf?version=0