A COLLABORATIVE APPROACH TO LEARNING THE COMMUNITY HEALTHCARE DESIGN STUDIO

Building stronger relationships between academic and professional healthcare design communities





Shireen Kanakri PHD, AIA Associate
Carl Johnson, RA, NCARB
Annette Majors
Scott Hesler







MEET YOUR TEAM









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BSA LifeStructures

Annette Majors
Project Manager
Franciscan Health
Indianapolis Hospital

Scott Hesler
Project Manager
Tonn & Blank
Construction





20,440

STUDENTS 2023-24 ENROLLMENT



93%

PLACEMENT RATE AMONG CAP GRADUATES



15:1

STUDENT: FACULTY RATIO



380

STUDENT ORGANIZATIONS



1975

YEAR BSA WAS FOUNDED

6

STUDIOS NATIONWIDE

AUSTIN | DENVER | INDIANAPOLIS | RALEIGH | ST. LOUIS | TAMPA

> ARCHITECTURE ENGINEERING INTERIOR DESIGN PLANNING

We create inspired solutions that improve lives.

CATHOLIC HEALTHCARE SYSTEM

12 TOTAL HOSPITALS

19,000 EMPLOYEES

AMERICA'S
250 BEST HOSPITALS
(2023-2024)













For over 100 years, Tonn and Blank Construction's focus has been building a legacy that is centered around creating long-lasting relationships with our clients and positively impacting the communities in which we work. We are the leading full-service construction management, general contracting and design-build firm in the Midwest with locations throughout Indiana.

- Founded in 1922 five office locations with 275+ employees
- 102 years of customer satisfaction evidenced by years of repeat clients
- Continuous innovative construction practices and implementation of new technologies
- Sound financial and management systems, unique insights of our client's investment
- Profits go back to the community we work in



LEARNING OBJECTIVES

UNIQUE LEARNING ENVIRONMENTS

where students discuss active projects in design and construction with professors & healthcare professionals in various healthcare facility and design office settings.

HEAR FROM STUDENTS

how site tours, physician interviews, & project feedback from practicing designers and healthcare professionals changed their perspective on healthcare design.

STRONGER RELATIONSHIPS

between academic and professional healthcare design communities & their renewed commitment to engage in educating the next generation of healthcare designers.

EDUCATIONAL IMPACT OF A COLLABORATIVE TEACHING MODEL

that invites practicing architects, planners, engineers, interior designers, healthcare professionals, as well as construction contractors into the educational process.



PROJECT PURPOSE

Guiding the Goals and Objectives



PROJECT **PURPOSE**

- Collaborating with Ball State offers a chance to educate future healthcare designers, share our expertise, and build connections among healthcare providers, A/E firms, contractors, and universities in the local healthcare industry.
- Provide students interested in healthcare design with practical insights into the design process and the healthcare A/E industry.
- Give students access to planners, architects, engineers, and interior designers for realworld insight into both the design process and the professional expectations.



PROJECT OVERVIEW

Neonatal Intensive Care Unit Franciscan Health Indianapolis Hospital



PROJECT **GUIDELINES**

Franciscan Health Indianapolis

Neonatal Intensive Care Unit

- > Space Program provided to guide the design
- > Compliance with **FGI Guidelines**
- > Work within existing Core & Shell Plan of the NICU
- > Maintain existing Entry/Exit points to the NICU
- > Awareness of neighboring Unit Adjacencies
- > Schedule: 4 Collaborations over 2-month period
- Current NICU Tour & Q&A with NICU staff



PROJECT LOCATION



Franciscan Health Indianapolis Hospital (FHI) (Indianapolis, IN)

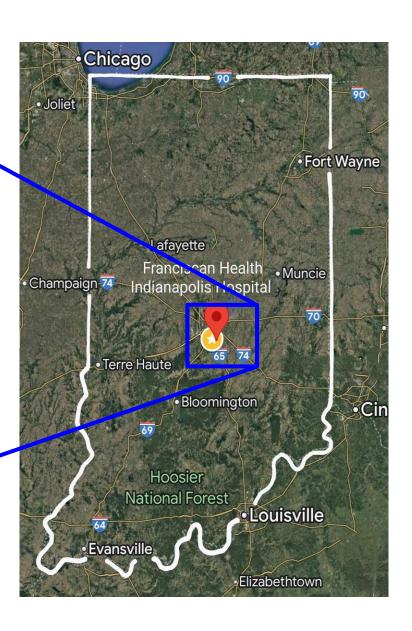
- 1 of 12 Franciscan Health Catholic Health System hospital locations.
- Located in central Indiana on the Southeast side of Indianapolis
- 68 mi. (1 hr. 12 min.) from Ball State University (BSU)
- 24 mi. (47 min.) from
 BSA LifeStructures (BSA)



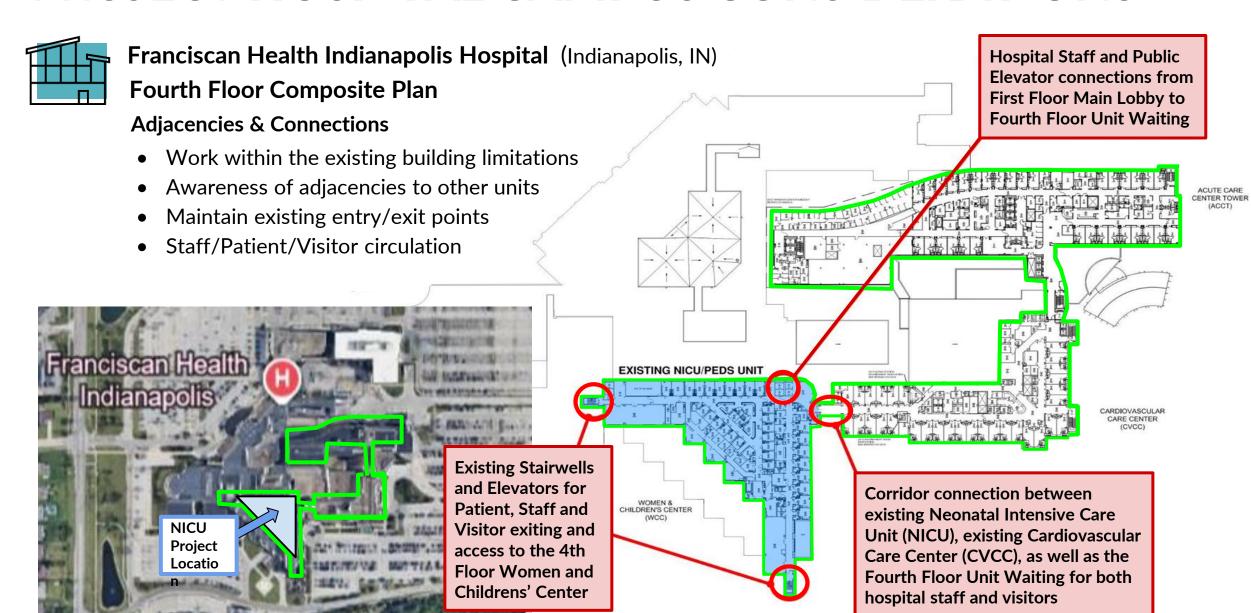


Ideal Location

Located between BSU & FHI, BSA is ideally situated for this collaborative team partnership.



PROJECT HOSPITAL CAMPUS CONSIDERATIONS



PROJECT **SITE**

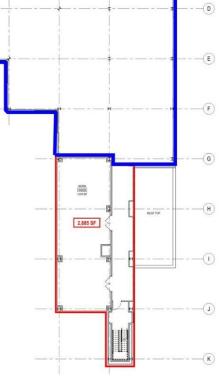


Franciscan Health Indianapolis Existing Fourth Floor Plan

Neonatal Intensive Care (NICU) and Pediatric (PEDS) Units

- e students' project site.

 Combined Clinical Space for Current NICU & PEDS Unit ting NICU & PEDS areas.
- Existing Core & Shell Plan served as the students' project site.
- Project site consisted of combined existing NICU & PEDS areas.
- Students worked within limitations of the following existing elements:
 - O Clinical space footprint (outlined in blue)
 - Column grid
 - Exit stairs
 - Exit corridors
 - Elevators
 - Elevator lobbies
 - O Hospital corridor connections to adjacent units
 - Mechanical rooms
 - Building storage spaces
 - Rooftop access
 - Exterior windows



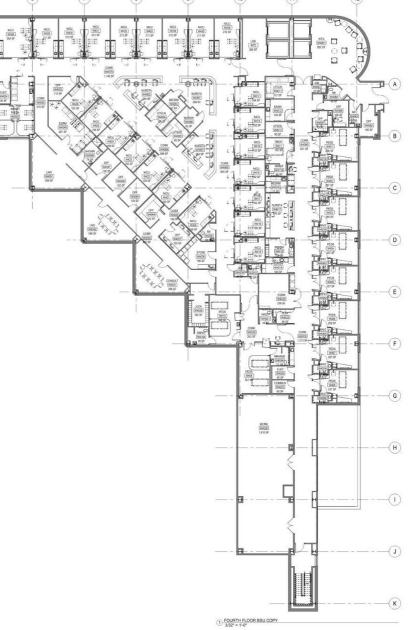
PROJECT **EXAMPLE**



Franciscan Health Indianapolis **Existing Fourth Floor Plan NICU/PEDS Units**



- This plan served as a teaching reference to help foster student conversations about healthcare design concepts, and explain design guidelines, hospital standards & NICU requirements
- The current NICU and PEDS unit designs provided examples on spatial use of form, function, juxtaposition, and circulation
- Students were taken on a tour of this current NICU space and took part in a Q&A session with the hospital NICU staff to further enforce the design concepts discussed in the studio
- In order to allow the students to develop their own design concepts, this existing NICU plan was reviewed with them as a group in a studio collaboration after their initial presentations



PROJECT **SPACE PROGRAM**



Franciscan Health Indianapolis (FHI)

Neonatal Intensive Care (NICU) Project Space Program

- Students were provided with this space program based on the type, size, and quantity of spaces in the current FHI NICU
- Design parameters from the 2022 FGI Guidelines were also provided for design compliance and to familiarize students with this process/requirement

Space Type	Quantity	NSF / Unit	Total NSF	Comments
Public Spaces				
Family & Visitor Lounge / Waiting Room		820	0	FGI 2.1-2.10.1.1 - Min. size = 1.5 chairs / patient bed
Public Toilet	2	65	130	Lavatory, toilet & changing table. Accessible. Unisex. Locate to be "readily accessible" to the Lounge / Waiting Room
Visitor Lactation Room	1	80	80	Seating, sink, counter, storage cabinet
Meditation / Bereavement	1	100	100	
Public Elevators - Lobby	2	115	230	Located next to Lounge / Waiting Room
Public Elevators - Waiting	2	85	170	Located next to Lounge / Waiting Room
Subtotal - Public Spaces	8		710	
Patient Care Spaces				1
Private Patient Room (1 Infant Care Station) Note 2	22	220	4,840	Provide separate wardrobe, locker or closet for garments & personal effects. Hand-washing station
Multiple-Infant Patient Room (2 Infant Care Stations) Note 3	2	310	620	Includes 4'-0" wide aisle space. Where fixed cubicle partitions a part of the design, an adjacent 8 feet shall be provided for passage of equipment
Multiple-Infant Patient Room (3 Infant Care Stations) Note 3	1	400	400	Includes 4'-0" wide aisle space. Where fixed cubicle partitions a part of the design, an adjacent 8 feet shall be provided for passage of equipment
Airborne Infection Isolation (All) Patient Room Note 2	2	220	440	Determined on the basis of an Infection Control Risk Assessme Include hands-free hand-washing station & provisions for observation of the infant. Minimum of one [1] required in the uni
All Room Antercom	2	65	130	Per ICRA requirements. Include space for donning & doffing PP hand-washing station, storage for unused PPE, disposal / holdin container for used PPE
Visitor / Family Toilet & Shower	5	80	400	Lavatory, toilet, shower, changing table. Accessible. Unisex. Locate to be near groupings of NICU Patient Rooms.
Couplet Care Patient Room [Parent and Infant sleeping Room] Note 3	0	300	0	Provide separate wardrobe, locker or closet for garments & personal effects. Hand-washing station
Couplet Care Patient Room Toilet		65	0.	Lavatory, toilet and shower. Accessible
Combination Neonatal Couplet Care & Labor / Delivery / Recovery / Postpartum Room Note 4				Provide separate wardrobe, locker or closet for garments & personal effects. Hand-washing station
Lactation Support & Infant Feeding Prep Space	1	300	300	Includes (2) work counters, (2) hand-washing stations, (1) dishwasher, (2) refrigerators, (2) freezers, (2) microwaves, (2) storage racks, (1) mobile work table, storage cabinets for pump & attachments and educational materials, storage & prep space for commercial infant formula and human milk.
Consult Room	1	120	120	Comfortable seating for 6-8 persons
Diagnostic, Treatment and Service Space				Space for respiratory & development therapy, blood gas lab, social work, as well as pharmacy, laboratory, radiology or other ancillary services
Subtotal - Patient Care Spaces	27		7,250	Shaded cell = key room quantity
Clinical Support Spaces				
Nurse / Care Team Station	4	280	1,120	Includes (6) workstations @ 35 NSF, copier/printer, pneumatic tube station,hand-washing station + hand sanitation dispenser
Nurse Work Area	0	25	0	Decentralized location (i) each pair of patient beds / rooms
Documentation Area (Include in Nurse Stations)	4	70	280	Includes work space for 2 @ 35 NSF. Include in or near Nurse Station.
Nurse / Supervisor Office	1	120	120	
Staff Office	5	100	500	
Multipurpose Room	1	240	240	conferences, reports, education, training sessions and

pace Type	Quantity	NSF / Unit	Total NSF	Comments
Hand-washing Station(s) (Include in Patient Rooms)		10	0	Include hand-sanitation dispenser, soap dispenser and paper towel dispenser. In a multiple-infant rooms, every bed position shall be within 20 feet of a hand-washing station. Where infant care stations are single-infant rooms, a handwashing station shall be provided in each room.
Medication Room [Medication Safety Zone] FGI Section 2.1-2.8.8	1	120	120	Work counter[s], hand-washing station, lockable refrigerator, locked storage, sharps disposal + space for automated medication-dispensing station [if required]
Clean Workroom	0	150	0	Includes work counter, hand-washing station and storage facilities for clean & sterile supplies
Clean Supply Room	2	120	240	Storage and holding for distribution of clean and sterile supplies
Sollad Workroom	0	120	0	Includes hand-washing station, clinical service sink, work counter space for separate covered containers. Where a separate fluid management system is used, provide electrical and plumbing connections per manuf, requirements, space for the docking station.
Soiled Holding Room	2	80	160	Includes hand-washing or hand-sanitation station, space for separate covered containers
Equipment Storage	27	20	540	20 NSFper patient bed. Disperse on unit.
Emergency Equipment Storage	4	20	80	Include emergency power receptacles. Disperse on unit.
Crash Cart Alcove	4	20	80	Include emergency power receptacles. Disperse on unit.
Nourishment Room	1	100	100	Work counter, hand-washing station, refrigerator, microwave, storage cabinets, temporary storage for unused/soiled food trays
Environmental Services Room [aka Housekeeping]	1	65	65	Includes service sink or mop-service basin, storage of supplies and equipment, hand-washing or hand-sanitation station
Electrical Room	2	60	120	
Communications Room	1	60	60	
IT Room	1	150	150	
Washer/Dryer Room	1	120	120	
Subtotal - Clinical Support Spaces	62		4,095	
Staff Support Spaces				
Staff Locker Room	1	250	250	25 staff lockers
Staff Break Room	1	350	350	Includes small kitchenette
Staff Toilet/Shower	4	80	320	Disperse on unit. Toilet, lavatory, shower. Accessible. Unisex.
Staff Lactation Room Staff Respite Room	1	80 120	120	Seating, sink, counter, storage cabinet
On-Call Staff Accommodations	2	140	280	Quiet, outdoor view, lounge furniture Sleeping room w/ bed, desk, chair, wardrobe, undercounter refrigerator, microwave.
On-call Staff Toilet	2	80	160	Toilet, lavatory and shower
Subtotal - Staff Support Spaces	12		1,560	
Total Net Area [NSF]			13,615	
Departmental Grossing Factor				
Total Departmental Area [DGSF]			1.60 21,784	
DGSF / Key Room				
Notes:			807	

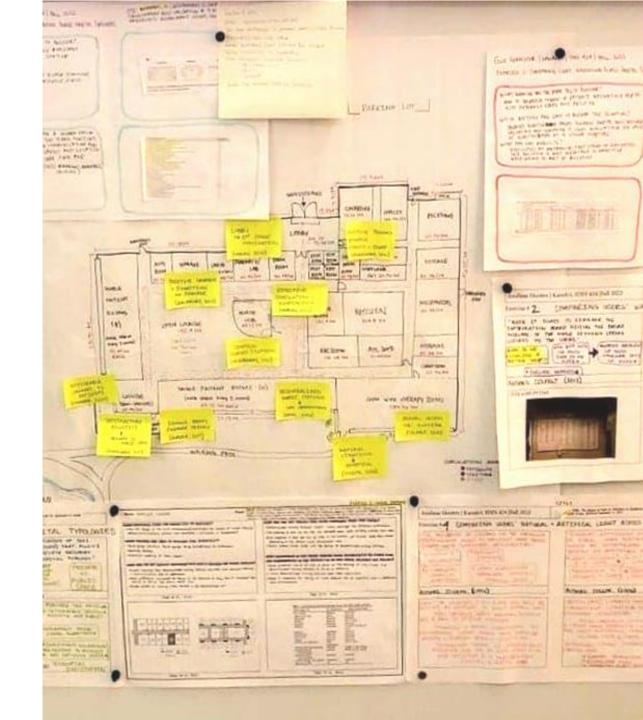
Clearances for the adult bed shall meet the requirements in Section 2.1-2.3.2.2 (Patient Room for Individuals of Size—Space requirements). Clearances for the infant ca

4. A minimum clear floor area of 435 square feet shall be provided. Clearances for the LDRP and NICU patients shall meet the requirements in Section 2.2-2.9.2.2(3)

tation shall meet the requirements in Section 2.2-2.9.2.2 (NICU Rooms and Areas—Space requirements), except 2.2-2.9.2.2 (1) (Area).

PROJECT PROCESS

From Concept to Completion



PROJECT **PROCESS**

- ➤ Partnered with Ball State students in the Healthcare Studio of the College of Architecture + Planning, focusing on designs inspired by a current project at Franciscan Health Indianapolis.
- ➤ A/E and healthcare industry professionals collaborated with Ball State University, Franciscan Health Indianapolis Hospital, Tonn & Blank Construction, and BSA LifeStructures to review, provide guidance, answer questions, and critique the creativity and functionality of the students' designs.
- Architects, interior designers, planners, engineers, hospital administrators, and construction contractors traveled to the Ball State campus for 4 studio sessions over a two-month period to attend student presentations and offer feedback.
- ➤ Healthcare Studio participants travelled to Indianapolis to present their finished projects at BSA LifeStructures' office, tour the office, meet architects, planners, interior designers & engineers to discuss working in the A/E healthcare industry.



PROJECT **TIMELINE**

NOVEMBER 2

NICU Site Tour & Hospital Staff Q&A Franciscan Health Indianapolis Hospital



NOVEMBER 28

Pre-Final Project
Student Presentations
BSA LifeStructures
Indianapolis Office
df



1

2

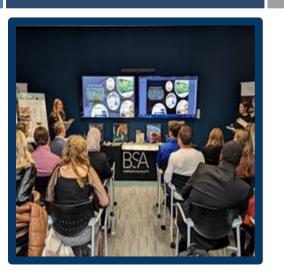
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4



NOVEMBER 14

Studio Presentation
Review Session
Applied Technology Bldg
Ball State University



DECEMBER 07

Final Project
Student Presentations
Pittinger Student Center
Ball State University

PROJECT **STUDIO AT BALL STATE**









PROJECT EDUCATIONAL TOOLS

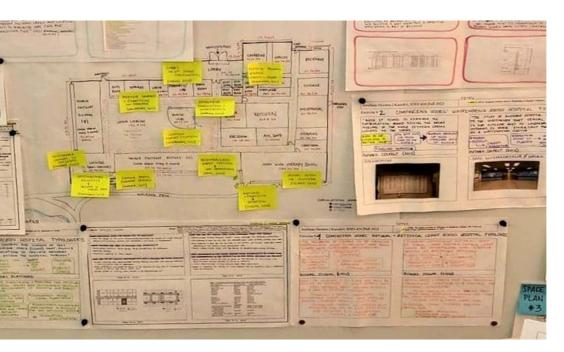


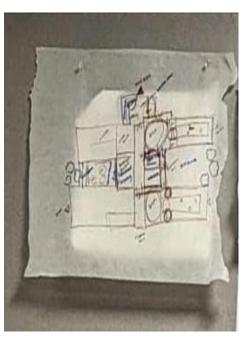






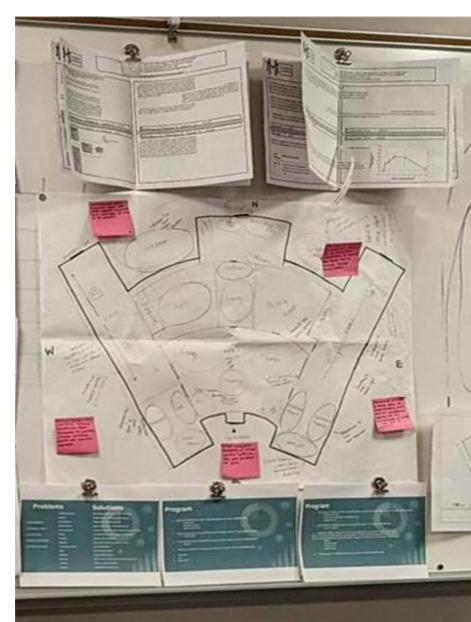
PROJECT EDUCATIONAL TOOLS







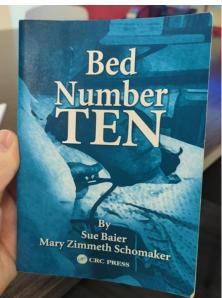


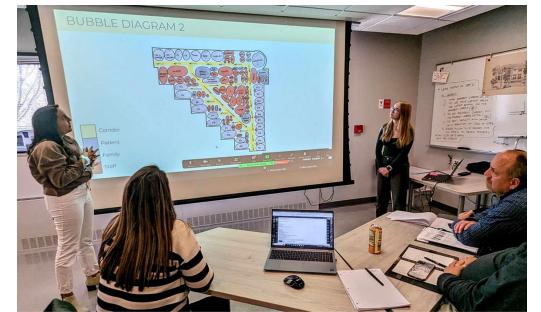


PROJECT EDUCATIONAL TOOLS













PROJECT PRESENTATION TOOLS













PROJECT TOUR OF THE NICU













PROJECT TOUR OF THE NICU













PROJECT **Q&A WITH NICU STAFF**





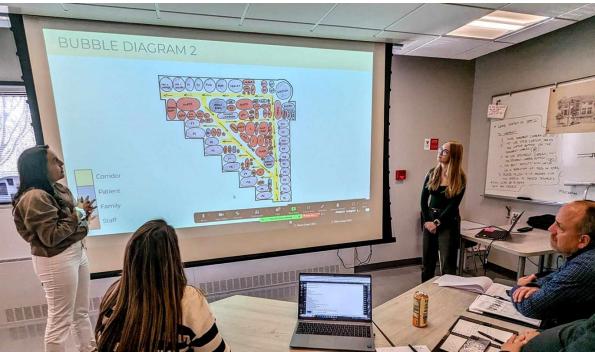




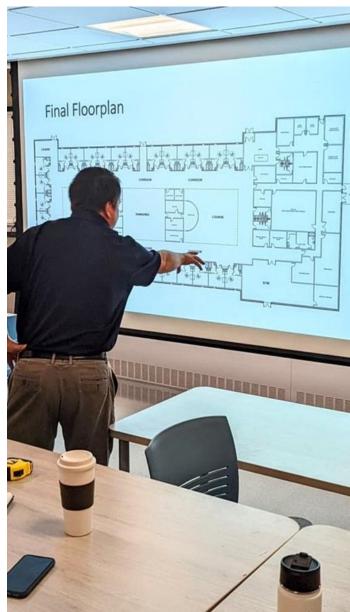
PROJECT STUDIO COLLABORATION





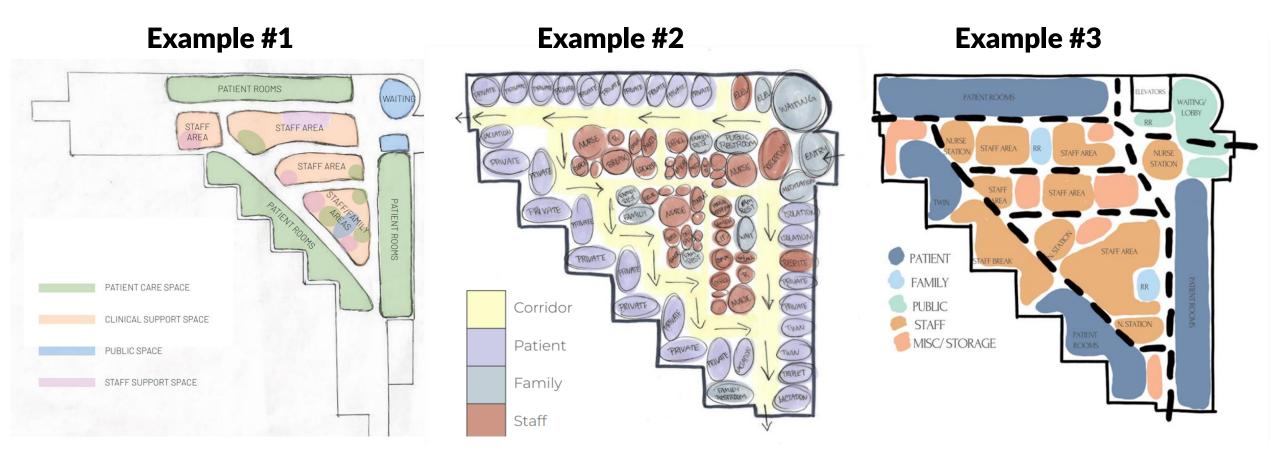






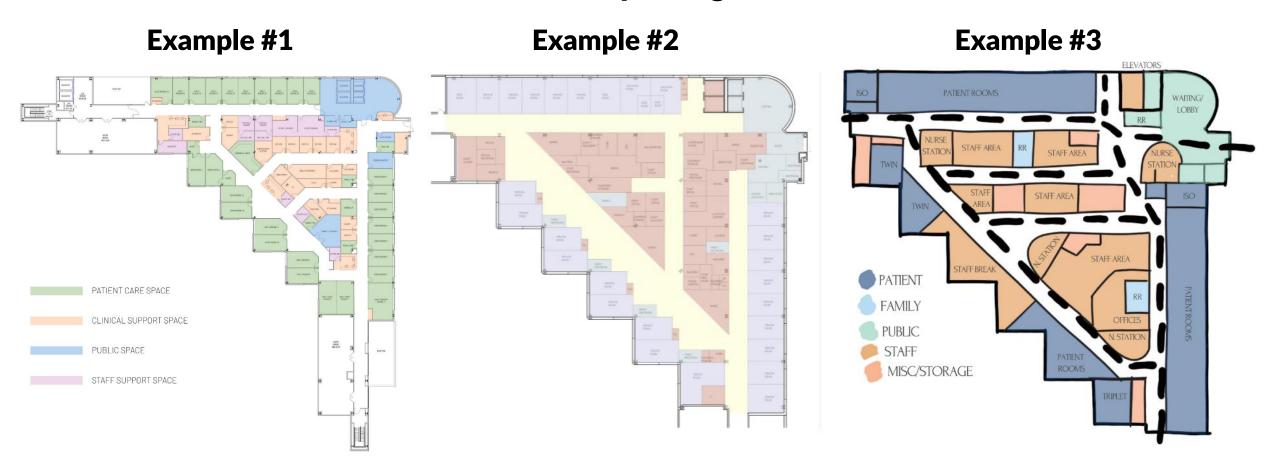
PROJECT **DESIGN**INITIAL BUBBLE DIAGRAMS

Student Concept Progression



PROJECT **DESIGN** ZONING DIAGRAMS

Student Concept Progression



PROJECT **DESIGN** FINAL FLOOR PLAN

Student Concept Progression

Example #1



Example #2



Example #3



THE FINAL PRESENTATION

A Culmination of the Learning Experience



PRE-FINAL PRESENTATIONS AT **BSA LIFESTRUCTURES**













PRE-FINAL PRESENTATIONS AT **BSA LIFESTRUCTURES**













PRE-FINAL PRESENTATIONS AT **BSA LIFESTRUCTURES**











FINAL PRESENTATIONS AT **BALL STATE UNIVERSITY**









FINAL PRESENTATIONS AT **BALL STATE UNIVERSITY**







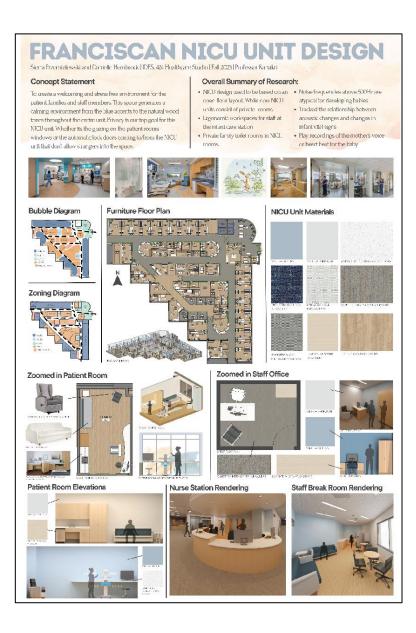




PROJECT FINAL PRESENTATION BOARDS







PROJECT FINAL PRESENTATION

Student Group Example #1: Chloe & Destiny

FRANCISCAN HEALTH: NEONATAL INTENSIVE CARE UNIT

CHLOE RICKENBACH & DESTINY MOORE | IDES424 | KANAKRI | FA2023

PRE-DESIGN RESEARCH: TAKEAWAYS

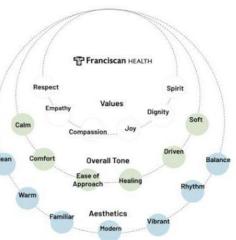
- 01. NICUs should also provide safe and comfortable spaces for families
- 02. Private (single family rooms) and public (open bay) areas are both optimal for patient care
- 03. Positive distractions can be incorporated in architecture, design, and wayfinding (changes in flooring and wall materials, themed signage, and ceiling features)
- 04. Relationships/communication between staff and families should be supported with designated spaces such as consult rooms
- 05. SFRs offer more control in terms of lighting and temperature allowing for patient comfort











OVERALL CONCEPT

- 01. NURTURING ASPECTS OF GROWTH
- 02. FAMILY FOCUSED CARE
- 03. STAFF OPTIMIZATION
- 04. NOURISHING ENVIRONMENTS
- 05. NATURAL AESTHETICS











PROJECT FINAL PRESENTATION

Student Group Example #2: Danielle & Sierra

FRANCISCAN NICU UNIT DESIGN

Sierra Przemielewski and Danielle Hembrock | IDES, 424 Healthcare Studio | Fall 2023 | Professor Kanakri

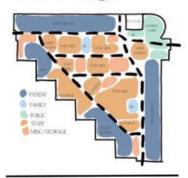
Concept Statement

To create a welcoming and stress free environment for the patient, families and staff members. This space generates a calming environment from the blue accents to the natural wood tones throughout the entire unit. Privacy is our top goal for this NICU unit. Whether its the glazing on the patient rooms windows or the automatic lock doors coming to/from the NICU unit that don't allow strangers into the space.

Overall Summary of Research:

- NICU design used to be based on an open floor layout. While now NICU units consist of private rooms
- Ergonomic workspaces for staff at the infant care station
- Private family toilet rooms in NICU rooms
- Noise frequencies above 500Hz are atypical for developing babies
- Tracked the relationship between acoustic changes and changes in infant vital signs
- Play recordings of the mother's voice or heart beat for the baby

Bubble Diagram



Zoning Diagram



Nurse Station Rendering



Furniture Floor Plan



SINGLE PATIENT AXON



Staff Break Room Rendering



Patient Room Elevations



Zoomed in Patient Room



PROJECT FINAL PRESENTATION

Student Group Example #3 Dharma and Aysiah



After doing case study and peer review research, vast amounts of new and helpful information was discovered. From the research, we found information that relates to how the patient, staff, and families interact and correlate within NICUs. This information was very helpful as we designed our space to include spatial as well as design considerations.

































THE NICU RENOVATION

Completed Construction Photos of the Franciscan Health Indianapolis Hospital NICU Renovation project that was the basis for the Ball State University Healthcare Studio project.

A/E Design by BSA LifeStructures Interior Design by Tonn & Blank Construction by Tonn & Blank



FRANCISCAN HEALTH INDY NICU RENOVATION













FRANCISCAN HEALTH INDY NICU RENOVATION













FRANCISCAN HEALTH INDY NICU RENOVATION











THE PARTNER EXPERIENCE

A University, Design Firm, Hospital, and Construction Contractor Unite for a Collaborative Journey in Education



UNIVERSITY COLLABORATION

College vs. Real Life expectation

Clients, designers, and construction contractors offer valuable perspectives and expertise that students learn from alongside their professors

Real appreciation for healthcare & interest in pursuing healthcare design

The Professor's Nickname: "Mrs. Why"

Championing the collaborative concept of academic and professional partnership in a healthcare focused design studio environment

Collaboration, coordination, and planning logistics



OWNER COLLABORATION

Real-world considerations of materials, functionality, and line of sight.

Commitment to Christ-like values, partnership, and healthcare outreach

The power of group themes and design concepts carried through to completion

Strong support for student growth in the classroom and in the field

Allocation of time for engagement with the students and partner professionals



DESIGN PROFESSIONAL COLLABORATION

Emphasize evidence-based design

Student engagement brings fresh, creative ideas & learning opportunity outside studio

Documenting and sharing the concept progression to highlight the design process

Operational insights from healthcare professionals, hosting students at the office

Multidisciplinary approach helps the students understand the design process

Discussing student aspirations in the fields of architecture and interior design



CONTRACTOR COLLABORATION

Enjoyed engaging with the students

Discussed constructability, cost, and navigating "dream killers"

Emphasized cost-benefit approach and taking constructive feedback seriously

Sharing knowledge, perspectives, and focus on helping the next generation

Reflected on the lasting impact of mentors early in one's career

Prioritize time and availability for the project



66

I really enjoyed having this collaborative type of class where architects, interior designers and planners would come into our studio and give us feedback. It was a little intimidating the first time, but once we got to know everyone it felt like a really great relationship to have feedback coming from them."

- Aysiah Owens (Hernandez)



FUTURE PLANS

Looking Ahead at Future Initiatives



FUTURE **PLANS**

- ➤ Healthcare Day featuring guest speakers
- > Implementing ideas proposed by students
- Hospital tours focused on future project-related themes or interests
- Hospital access for comparing with potential project sites
- Student project boards or presentation materials displayed at the hospital for administration, staff and community viewing/interaction
- ➤ Share HCD Presentation at hospitals, A/E firms
- Establishing a BSU Healthcare Design Center



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