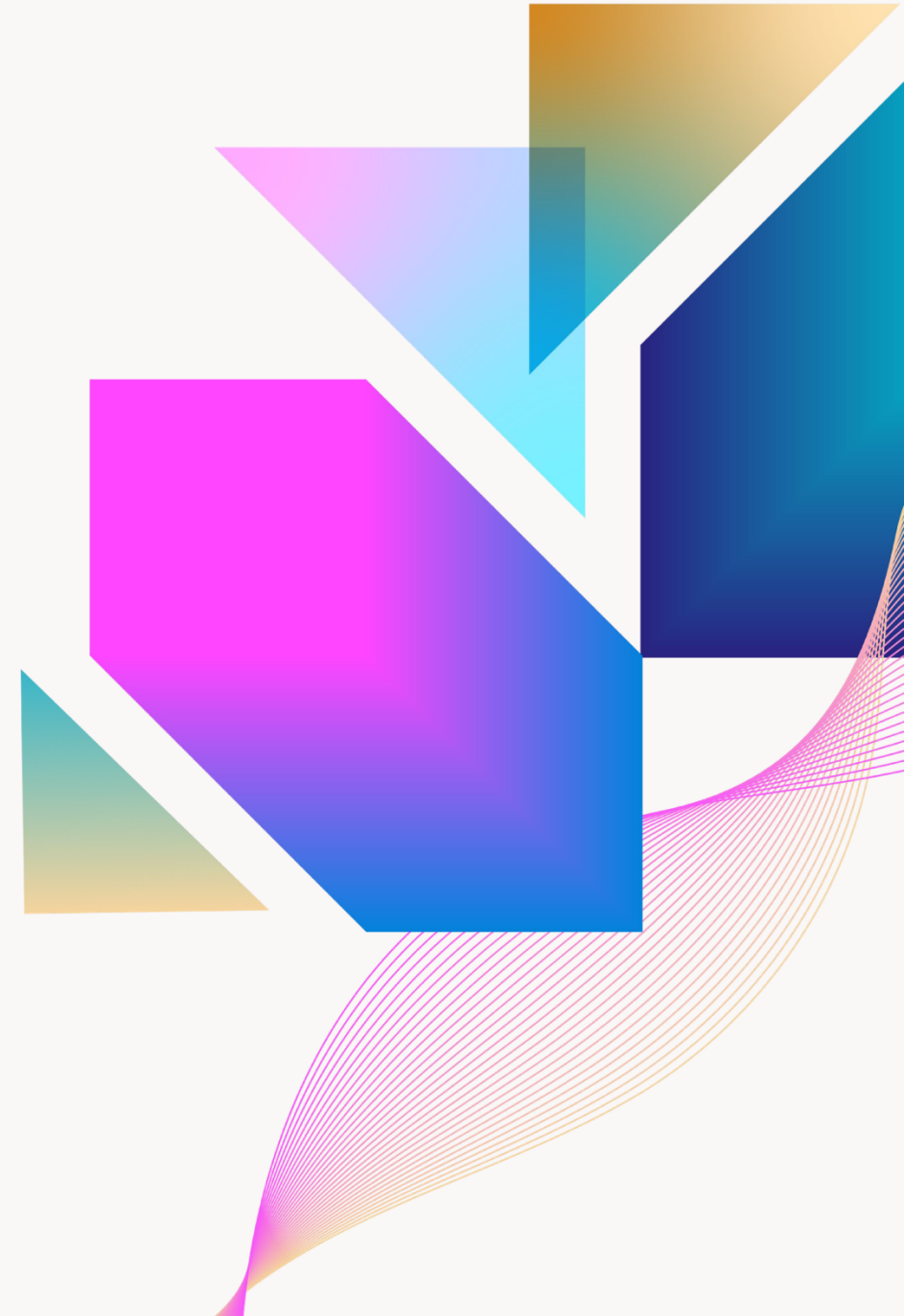




“Marking up the Future: How Students are Leveraging Bluebeam for Future Success in the Construction Industry”

**Nathan Howard
Associate Professor
Fort Hays State University**



AGENDA

- Introduction
- Discussion of Course Work
- Student Objectives using Bluebeam
- Examples of Assignments
 - Sample of Instruction
- Examples of Student Work
- Industry Partners and Advisory Board Involvement
- Closing
- Q&A

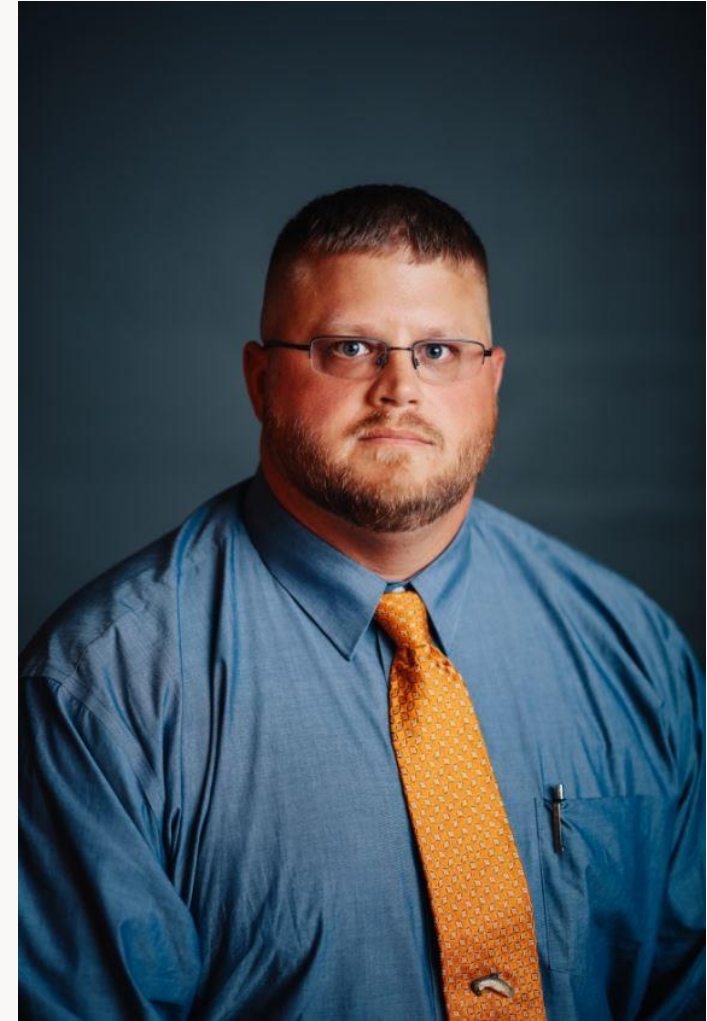
Nathan Howard

Associate Professor at Fort Hays State University

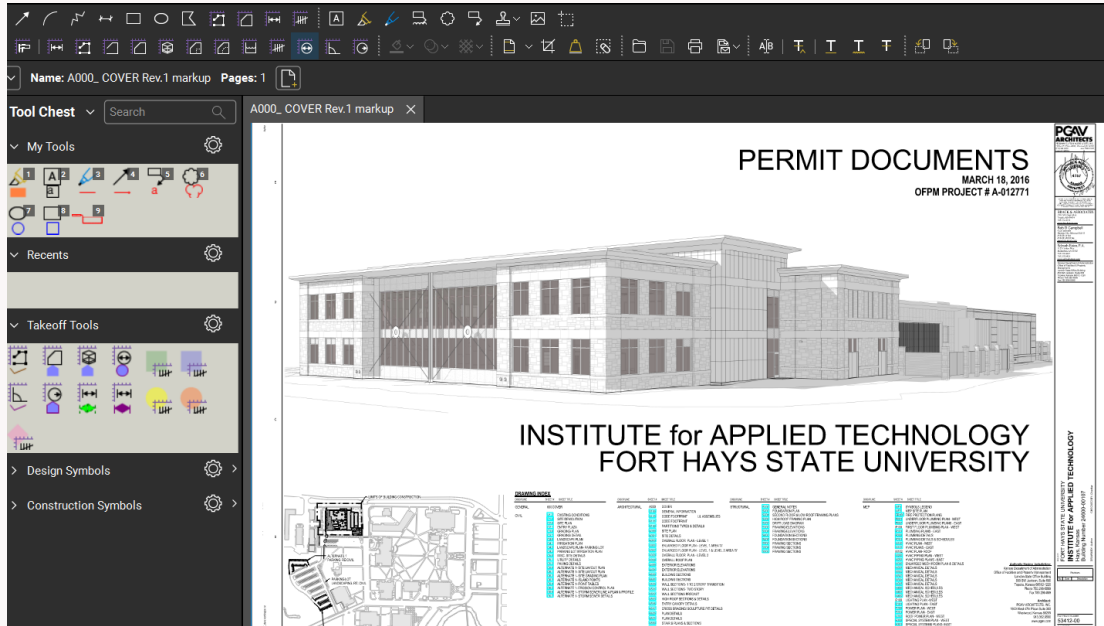
**lead Professor in Construction management
Concertation**

**Lead Sponsor For FHSU AGC student
Organization**

**7 years at the University
20 years in Education**



Objective for Students and Bluebeam



Upon completion of the courses, students will demonstrate proficiency in utilizing Bluebeam Revu for construction management applications, including digital document review, measurement and quantity takeoffs, and collaborative project communication, in order to enhance accuracy, efficiency, and professional practice within the construction industry.

Course Work that uses Bluebeam

TECS 382 Estimating and Scheduling

- Construction cost reporting, estimating and control. Construction planning, both long-term and short-interval, construction scheduling, monitoring, and control along with computer applications. Successful construction companies have an understanding of the inner relations of labor production, cost control and schedule management. We will use a series of problems and activities that have both individual and team components to define and develop these skills. In each activity a real problem will be presented.

TECS 385 Construction Planning and Design

- This course is designed to give the student look at the multitude of areas considered when planning and designing a construction project, both residential and commercial. Some of the areas that are covered are land use, historical considerations, environmental impact, community impact, right-of-way, state /governmental issues, traffic, lighting, green construction, utilities, design specifications, ADA. These areas will be covered by classroom discussion, research, classroom speakers, field trips. A final project will be required.



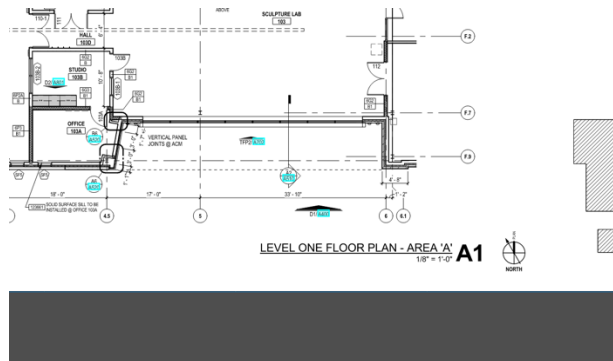
TECS 382-Estimating

Reviewing construction drawings and specifications to find any inconsistencies within the project.
Performing material takeoff on the different scopes of work.

- Setting scale to the PDF
- Setting up students' tools for the takeoff of materials on the project.
- Organizing their takeoff tools
- Organizing the data from the drawings.

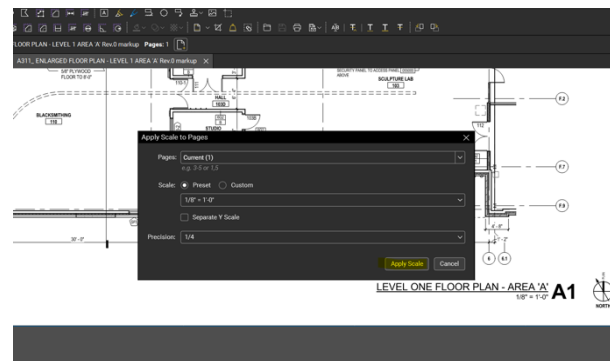
Setting scale for the drawing

Locating Scale in Drawing



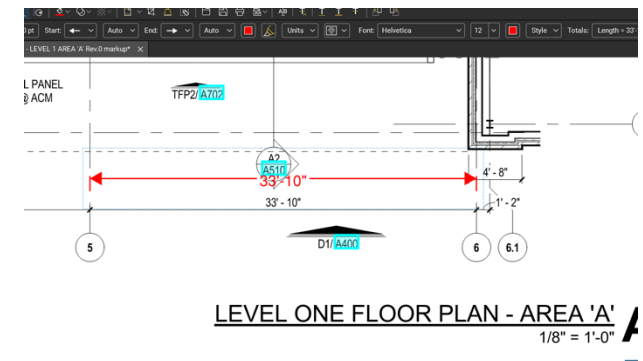
Find the scale on the drawing or locate a long dimension for setting a custom scale.

Setting select scale or custom scale



- Preset scale
- Custom scale
 - Custom will have you measure a known dimension to set scale.

Verifying the scale



Make sure to verify the scale is correct with a known dimension on the drawing prior to starting takeoff.

Takeoff tools

Basic tool setup

- Polylength
- Length
- Area
- Volume
- Count
- [Setup video](#)

The screenshot displays the Bluebeam software interface for takeoff. The top section shows a floor plan titled "A311_ENLARGED FLOOR PLAN - LEVEL 1 AREA 'A' Rev.0 markup*". The plan includes various rooms such as "MATERIAL FINISHING LAB 141", "FINISHING STAGING AREA 137", "FINISHING LAB STORAGE 137A", "VEST. 100J", "WELDING CLASSROOM 144", "OFFICE 142", "LOCKERS 100H", "METALS CLASSROOM 132", and "CORRIDOR 100G". Dimensions and room labels are visible on the plan.

The left sidebar contains the "Tool Chest" with a search bar and several tool categories: "My Tools", "Recents", and "Takeoff Tools". The "Takeoff Tools" section includes icons for Polylength, Length, Area, Volume, Count, and Design/Construction Symbols.

At the bottom, the "Markups List" table is visible, showing a list of takeoff items with their respective page labels, comments, authors, dates, lengths, volumes, statuses, and colors.

Subject	Page Label	Comments	Author	Date	Length	Volume	Status	Color
Doors-Right (1)								
Doors-Right	1	5	njhoward	9/1/2025 4:31:3...				Blue
Metal Double Doors (2)								
Metal Double Doors	1	1	njhoward	9/1/2025 4:25:5...				Pink
Metal Double Doors	1	2	njhoward	9/1/2025 4:32:1...				Pink
Windows (1)								
Windows	1	5	njhoward	9/1/2025 4:30:2...				Yellow
Windows-Store Front (2)								
Windows-Store Front	1	9	njhoward	9/1/2025 4:30:5...				Orange

TECS 385- Planning and Design

Students set their default tools

Create call-outs for their submittals

Bring attention to a location on drawings for RFIs

Review and highlight specifications that have importance to the planning of a project.

Garage Bolt Holddown

Product details: Provides loads for intermediate-load-range shear walls, braced-wall panels and lateral applications in wood construction

Installed with bolts into studs or columns

Offers low-deflection performance for various load requirements

Suitable for back-to-back applications where eccentricity is a concern

Key features: Installed after concrete and framing is in place

Can be installed directly on sill plate or above

Self-jigging, ensures code-required minimum of seven bolt diameters from the end of the post when flush with sill plate

Material: Zinc Galvanized, G90

Finish: Galvanized

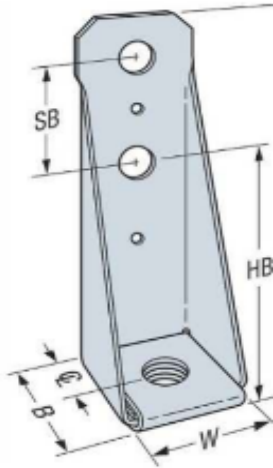
Installation: Bolt holes minimum of 1/32" to a maximum of 1/16" larger than bolt diameter

Stud bolts should snug and tightened with standard-cut washers between the wood and nut

Product Specifications: Machine bolts shall be installed with the nut on the opposite side of the holddown. If it is reversed then it could reduce the allowable loads per NDS requirements

References to bolts are for structural quality through bolts equal to or better than Grade A

These products are available with additional corrosion protection



HD3B

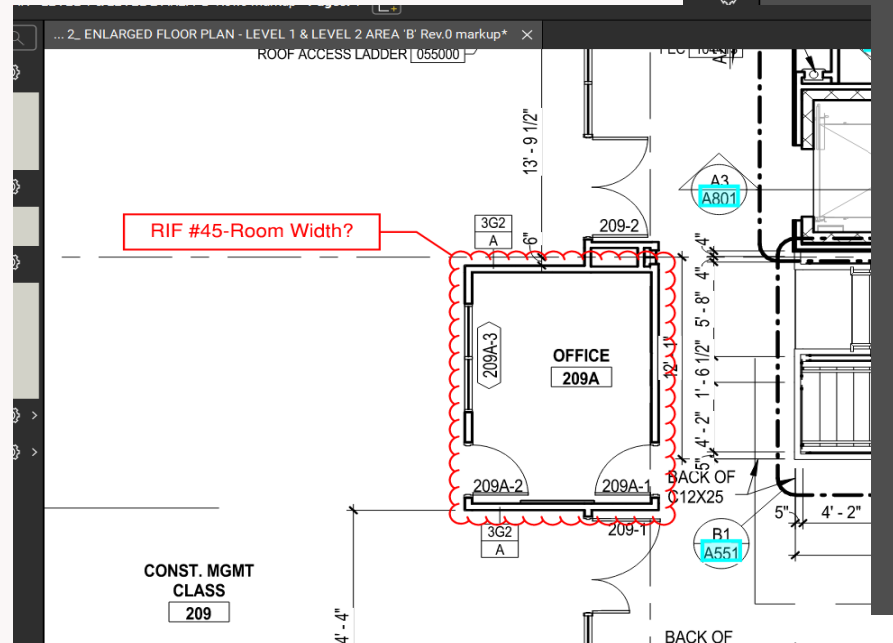


HD3B Vertical Instal

Basic Planning with Bluebeam

- Sample Student Submittal
- Clouding and highlighting information in Specification Book.

- [Video](#)



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Studco_Fort-Hays_2025-03-04-15-55-45_1881752812*

PRODUCT CODE: SS-35833
PUBLICATION DATE: DECEMBER 2024

STUDCO
BUILDING SYSTEMS

SUBMITTAL SHEET

3-5/8" 33 Mils Structural Stud with 1-5/8" Flange (G60)

PRODUCT INFORMATION

Description: 3-5/8" 33 Mils Structural Stud with 1-5/8" Flange (G60)
Code: SS-35833
Category: Studco Structural Stud

As per 054000-2.3

GEOMETRIC PROPERTIES

Web Depth (in)	3-5/8"
Flange Height (in)	1-5/8"
Stiffening Lip	1/2"
Weight (lb/ft)	0.89
Punchout Width	1-1/2"
Punchout Height	2-1/4"
Gauge	20 GA
Design Thickness	0.0346
Thickness - Mils	33
Yield Strength FY (KSI)	50
Coating	G60

GROSS SECTION PROPERTIES

Cross Section Area A	0.262 in.2
Moment of inertia I _{xx}	0.551 in.4
Section modulus S _{xx}	0.304 in.3
Radius of gyration R _{xx}	1.450 in.
Moment of inertia I _{yy}	0.099 in.4

SS-35833

Tips and Takeaways from classes

- Be adaptive in class.
- Use industry examples for students
- Listen to students when they come back from internships.
 - Companies have little differences in how they complete paperwork.

Bluebeam

- Learn the shortcuts in the program.
- Have the students set up their tools and let them make adjustments to meet their needs.
- Use Bluebeam University to assist students.

What got me to this point?

- Been in the Lead Construction Management position for 4 years.
- When I took the position curriculum needed an update to meet student and company needs.
- Suggestions from students and Industry partners led me to implement Bluebeam into our curriculum.
- Bluebeam Educational License
- Applied Tech Career Fair
 - 250 students,65 companies,30 alumni recruiting



Industrial Partnerships

- **Company visits during the summer**
- **AGC of Kansas meetings**
- **Career fair discussions about the skills students need**
- **Alumni reflections after they have been in the field.**



Graduation Success of Fort Hays State Students

Department of Applied Technology as a whole.

Academic Year Completions Undergraduate



College	Depart- ment.	Awd Lvl	Program Code.	Major Name.	Academic Year					
					AY2019	AY2020	AY2021	AY2022	AY2023	AY2024
WCSTM	TECS	BACH	533-0839	Technology Studies	4	2		32		1
				Technology Studies (Construction Management)	21	16	25		22	17
				Technology Studies (Construction Technology)		1			2	2
				Technology Studies (Engineering Design)	1	1	5		6	6
				Technology Studies (Industrial Technology)	6	3	1			
				Technology Studies (Manufacturing Technology)			3		2	2
				Technology Studies (Technology Education)	1	4			2	1
				Total	33	27	34	32	34	29

Graduation Rate Percentage

Undergraduate Career Outcomes Data - Summer 2020, Fall 2020 and Spring 2021

	Emp. Ellis Co.	Emp. Other Kansas	Emp. Out of State	# of Grads	Emp. In Major	Emp. Out of Major	Cont. Edu.	Not Seeking	Still Looking	No Information	Success Rate
BUSINESS & ENTREPRENEURSHIP											
Physics	0	0	4	5	4	0	0	0	0	1	100%
Technology Leadership	1	2	3	7	6	0	0	0	0	1	100%
Technology Studies (BS)	3	12	15	34	28	2	1	0	0	3	100%
Applied Technology (AAS)	1	4	4	11	7	2	0	0	0	2	100%

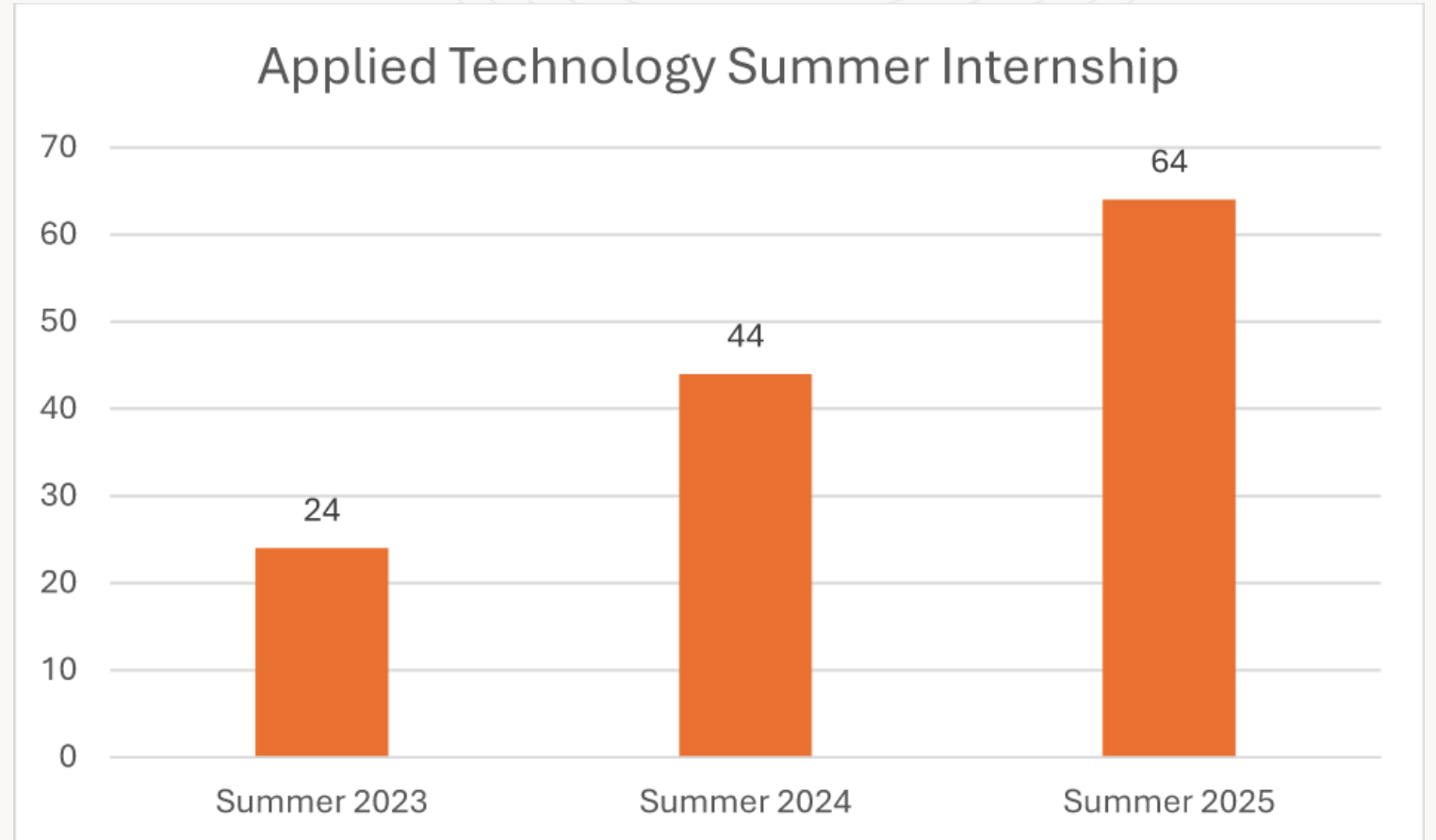
Undergraduate Career Outcomes Data - Summer 2023, Fall 2023 and Spring 2024

	Emp. Ellis Co.	Emp. Other Kansas	Emp. Out of State	# of Grads	Emp. In Major	Emp. Out of Major	Cont. Edu.	Not Seeking	Still Looking	No Information	Success Rate
BUSINESS & ENTREPRENEURSHIP											
Physics	0	3	0	4	3	0	1	0	0	0	100%
Technology Leadership	1	1	3	6	5	0	0	0	0	1	100%
Technology Studies	2	12	7	28	21	0	1	0	0	6	100%
Technology & Leadership (AAS)	1	0	0	1	1	0	0	0	0	0	100%

Internship Success

Department of Applied Technology as a whole.

This information includes students in Manufacturing, Engineering Design Technology, Construction Management, and Construction Technology.



Who is hiring?

Companies from 2025 Career Fair

Employer Name	Employer Industry
Spirit AeroSystems	Aerospace
AGCO Corporation	Agriculture
Murphy Tractor and Equipment Co.	Agriculture
Kirkham Michael	Civil Engineering
JEO Consulting Group Inc.	Civil Engineering
Driggs Design Group, PA	Civil Engineering
Cerris	Construction
Nabholz Construction Services	Construction
MCL Construction	Construction
MegaKC Corporation	Construction
Crossland Construction	Construction
The Law Company Inc	Construction
Straub Construction	Construction
SHERWOOD CONSTRUCTION CO	Construction
Dondlinger Construction	Construction
Hutton	Construction
Primoris Service Corporation	Construction
Wiens & Company Construction, Inc	Construction
BRB Contractors, Inc.	Construction
Eby Construction Company	Construction
Glassman Corporation	Construction
Mead Lumber	Construction
CAS Constructors, LLC	Construction
One Source Products	Construction
KBS Constructors Inc.	Construction
JE Dunn Construction	Construction
Central Consolidated, Inc.	Construction
Commercial Builders, Inc.	Construction
Midwest Drywall	Construction
UCI Industrial Engineering & Construction	Construction
McCown Gordon Construction	Construction
Icon Structures, Inc.	Construction
Ames Construction	Construction
Zernco	Construction
Simpson Construction Services	Construction
Bartz Construction	Construction
BHS Construction, Inc.	Construction
PWC Inc	Construction

Walters Morgan Construction	Construction
Buildings by Design	Construction
Conco Construction	Construction
Brack & Associates Consulting Engineers, P.A.	Design
Burns & McDonnell	Engineering & Construction
Wilson & Company, Inc., Engineers and Architects	Engineering & Construction
Marine Officer Programs Kansas City	Government - Local, State & Federal
Custom Wood Products, Inc.	Interior Design
Vortex Global Solid & Bulk Handling Components	Manufacturing
Custom Dredge Works Inc	Manufacturing
Sunbelt Solomon	Manufacturing
Hess Services, Inc.	Manufacturing

Finn-Kool, Inc.	Manufacturing
Great Plains Manufacturing, Inc.	Manufacturing
Southern Star Central Gas Pipeline	Oil & Gas
RVW, Inc.	Other Industries
Mark One Electric Co. Inc.	Other Industries
ICM	Utilities and Renewable Energy
Sunflower Electric Power Corporation	Utilities and Renewable Energy
Midwest Energy, Inc.	Utilities and Renewable Energy



THANK YOU

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www.fhsu.edu/appliedtechnology/