KaTO
Mission:

KaTO seeks to create architecture as a catalyst to advance education in underprivileged cultures.

KaTO is a design/build studio which engages students of architecture, engineering, and building construction to design and construct schools in developing countries. We serve both a domestic as well as a foreign cause, by educating future professionals in America and providing access to education for children internationally.

KaTO is a 501(c)(3) non-profit organization.
Team

Kyle Thomas Murphy
Founder and Executive Director

Prior to founding KaTO, Kyle worked with HKS as a sports designer for NFL, MLB, NBA, and collegiate stadia and arenas world-wide. After departing from corporate architecture, he founded KaTO as a response to the tremendous opportunity for architects and engineers to confront the international need for education. Kyle has been active as a visiting instructor for hand delineation seminars at Virginia Tech.

Marcy Wheeler
Designer and COO

Marcy has been a designer with UVA-based Initiative ReCOVER, and received the Jefferson Public Citizens Grant to design and construct a primary school in rural Uganda. Marcy is also part of the Perkins + Will team in Atlanta, and has been a designer for cultural and residential projects in Turkey, as well as for projects as part of the firm's Social Responsibility Initiative.

Eric Saylor, AIA
Designer

Eric is an educator, architect, and photographer, and has worked as a designer for HKS Architects and Price Studios on a range of project typologies and scales. He currently is a visiting faculty member for VCU interior design students, serves on the Board of Directors for AIA-Richmond, and is a licensed architect in Virginia.

Florence Christine Graham
Designer

Florence is an architectural designer working on new construction, high density residential projects in the DC Metro area as part of KTGY Architects. She graduated from Virginia Tech and won the international Solar Decathlon competition in Madrid, Spain with Virginia Tech's LumenHaus team, a project which was recognized with an honor award from the American Institute of Architects.

Theresa Kelly
Designer

Tess is an architectural designer with Kishimoto, Gordon, and Dalaya in Washington, DC. Her work since graduating from the Virginia Tech School of Architecture includes a variety of residential and interior design projects, with a focus in affordable housing. Tess is a passionate traveler who's wanderlust and enthusiasm for experiencing other cultures has taken her throughout Eastern Europe, and to the Middle East, Africa, and Central America.

Gordon MacGregor
Designer

A graduate of Virginia Tech’s School of Architecture + Design and the Washington-Alexandria Architecture Center, Gordon has been a designer with Build With Prospect, Inc. a design/build worker cooperative located in Brooklyn, NY focusing on sustainable/low energy design and construction methods through the Passive House Standard, and recently with Kulinski Group Architects in Old Town Alexandria, which specializes in residential and commercial projects.
2015 Visiting Lecturers

Shannon B. Kraus, FAIA, FACHA, LEED AP
Principal and Managing Director Washington DC, HKS
2015 President, National Architectural Accrediting Board

Spending countless hours drawing as a young boy and a lot of time walking jobsites with his dad, a hospital HVAC contractor, architecture caught Shannon's attention at an early age. Later, after working in architecture for several years and receiving an MBA, Shannon felt a pull toward healthcare architecture. With a focus on smart design, Shannon's project approach provides innovative solutions that balance lean operations with cutting-edge healing environments. Using this philosophy, he has been an integral part of the design and planning of over 20 million square feet of healthcare projects around the globe during his 18 years of experience in healthcare planning.

Helene Combs Dreiling, FAIA
2014 President, American Institute of Architects
Executive Director, Virginia Center for Architecture

Upon receiving a Bachelor of Architecture degree from Virginia Tech, Dreiling followed a career path largely beyond the bounds of traditional architectural practice and now serves as Executive Director of the Virginia Center for Architecture. She has worked in several not-for-profit settings such as The Colonial Williamsburg Foundation and as President for The American Institute of Architects in Washington, DC, exposure that provided her with unique non-profit management experience and professional fundraising expertise. Among other awards for distinguished leadership, Dreiling was elevated to AIA Fellowship in 2000 in recognition of her exemplary volunteerism for the profession.

Ryan Seckinger, PE
Principal, Walter P Moore Engineers and Consultants

Seckinger is a graduate of Texas A&M University (Bachelor of Science and Master of Science, Civil Engineering). He is a licensed Professional Engineer in Virginia, Maryland, Texas and Washington D.C. He also serves as the leader of Walter P Moore’s Healthcare Community of Practice - a national collaborative organization for developing and sharing best practices. Seckinger is a principal and senior engineer in the Structural Engineering Services Group in Walter P Moore’s Washington, DC office, and in 2010 was the recipient of the Javier F. Horvilleur Outstanding Young Engineer Award.

Fred Ortiz, AIA
Principal and Director of Design, HKS

Fred is a Principal with HKS Sports & Entertainment and has over 24 years experience working in healthcare, higher education, residential, memorial, and most recently, sports design for both collegiate and professional franchises. Throughout his career, Fred has been involved in numerous award-winning projects and is passionate about process and the act of crafting thoughtful, innovative solutions.

Cyrus Izzo, PE
Co-CEO/Co-President, Syska Hennessy Group

Cyrus has over 20 years of management level client experience, including extensive involvement in all aspects of major building systems projects, incorporating a comprehensive approach blending facilities management, MEP design, IT, and security. Under Cyrus's leadership, the Critical Facilities practice has become a market leader in technical thought leadership within the International mission critical market. He is a Board member of the National 7x24 Exchange, a Board member of the ACEC Metro NYC Chapter, a member of the IEEE and a member of Corenet Global.
Board of Directors

Helene Combs Dreiling, FAIA
2014 President, American Institute of Architects

A. Jack Davis, FAIA
Dean, College of Architecture and Urban Studies, Virginia Tech

William Galloway
Director, School of Architecture + Design, Virginia Tech

Joseph Lenski III
Co-Founder and Vice President, Edison Research

Catherine Hollinger Lenski
Former School Administrator, New Jersey Public Schools

Michael Cohen
Director of Community Relations, Arava Institute

Audrey Gelb
Vice President, Production, ABC Studios

Kyle Thomas Murphy
Executive Director

Above: Field Engineers inspecting building footings
Academic Model

KaTO serves as a conduit between student talent, the profession realm, and the international need. Students join KaTO during an externship to design a real project and travel for construction. Students also develop relationships with corporate partners in architecture, contracting, engineering, and other disciplines to bring the projects to fruition.

The externship program is a hybrid between three specific university programs: design/build studio, professional practice work setting, and study abroad.

Program objectives:

- Create culturally sensitive works of architecture to respond to international needs
- Produce comprehensive research to support architectural interventions and advance architectural typologies
- Develop student digital and manual skill sets
- Immerse students in professional practice through creation of complete sets of working drawings, as well as management of responsibilities of architects, consultants, contractors, clients, and suppliers

Corporate partners form a professional network for mentoring the students during the program. Professionals visit the studio for student work reviews, and students visit the firms for tours, lectures, and insight into professional practice. Such interactions allow for professionals to strengthen relationships with university programs, and recruit new student talent.
Right: La Estrella construction progress
Below: Early construction progress
Bottom-right: Completed school
Abstract

During the fall of 2015, KaTO will engage university students to design and construct a primary school for an underprivileged community in Costa Rica. The project team will be comprised of students from architecture, engineering, industrial design, interior design, landscape architecture, building construction, and other disciplines.

KaTO will complete the project in collaboration with the ministry of education, local architects, consultants, and material suppliers. At the conclusion of the semester, students will travel for construction. The design studio will include research, design, and documentation.
Externship

The program is a hybrid between an academic design/build studio, professional practice, and a study abroad.

Through partnerships with university architecture and design programs, students may elect to join KaTO during an externship for fall semester or spring semester and receive university credit. The program is structured to satisfy National Architecture Accrediting Board (NAAB) requirements to keep students on track to graduation, as a means of responding to various pedagogical models of university programs. The program includes a design studio, an independent study, professional practice, and building assemblies course, and students may elect to receive credit in all or part of this course load.

I. Design Studio - 6 Credits

As a theory-based and process-oriented pedagogy, the design studio resembles the primary academic design lab taken by student architects each semester. Students may elect to remain in contact with a faculty advisor from each respective university. Design studios have consistent reviews and guidance by visiting professionals.

II. Professional Practice - 3 Credits

Students receive instruction and are immersed in the practice of architecture while working under the direction of experienced designers and project architects. The course is structured in a similar manner to that of university courses, and includes office visits and guest lectures.

III. Independent Study - 3 Credits

Students will identify a topic specific to design and construction in third-world countries for further exploration. The investigation is to be more comprehensive than the research associated with the primary studio project, and will manifest in additional deliverables at the conclusion of the semester.

The independent study may be structured prior to the semester between each student and his or her faculty advisor.

IV. Building Assemblies - 3 Credits

Materials and methods are examined with respect to buildings of concrete, wood, metals, masonry, and glass construction. Detailing and other design considerations are presented relative to building occupancies, construction types, and other building codes, as well as in the context of the primary studio project.

V. NAAB

The externship fulfills requirements of the Student Performance Criteria (SPC) and the four associated realms of education. Additional instruction is provided for manual and digital skill sets to aid student design and documentation, improve future studio work, and prepare students for entering the field.

Note: KaTO is a professional office, not an educational institution. Therefore, credits are not awarded by KaTO, but by respective universities. Specific number of credits outlined above are recommendations based on typical awarded credits, such as 6 credits for design studio. While not required, universities may elect to have KaTO fulfill SPCs.

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A. Research

The design team will produce comprehensive documentation of research, which will compliment design presentation materials and culminate in a printed book. The research will be comprised of a rigorous analysis of political, historical, economic, cultural, and religious topics at a multitude of scales. Students will also heavily explore logistical constraints and opportunities as a catalyst and a framework for design development. It is necessary for each student to fundamentally understand the “who, what, where, when, and how” of each available material, transportation method, and construction process, so that design is driven by the appropriate parameters. Research will also include thorough building analysis of relevant precedent studies, as well as a range of humanitarian architecture and design solutions internationally.

The implementation of environmental building systems within such a typology presents a high level of complexity and will remain a central question throughout the studio. Design will respond to climate analysis through the research and development of passing cooling, solar shading, façade treatment, site orientation, landscape strategies, programmatic organization, and so forth. Furthermore, students will be challenged by logistical constraints, specifically cost and the limited availability of advanced structural, MEP, and enveloping systems.
B. Design

Objectives:

+ Create a culturally sensitive work of architecture within logistical and economic project constraints
+ Create a space which inspires learning, both among children of the community to attend school and parents to value sending children to school
+ Develop sustainable design solutions for building systems, using responsibly sourced materials

C. Documentation

A final set of construction documents will be issued, which will include architectural, structural, mechanical/electrical/plumbing, civil, and landscape drawings.

The design team will explore opportunities for most effectively communicating construction documents to unskilled labor, beyond typical working drawings.
Precedent Studies

The design team will document a series of precedents to develop a firm understanding of construction in developing countries where resources are less abundant. When possible, it will be necessary for the team to directly contact the design firms/organizations which completed these projects for interviews.

A. Scope

Size of project
Architectural program
Budget

B. Existing Conditions

Site location in relationship to electric grid, if applicable
Sanitation levels
Security issues
State of water infrastructure (turbidity, pathogens, access, etc.)
Proximity to seismic zones
Site elevation

C. Materials

All major building materials
Source of materials
Methods of transportation to site
Who was responsible for transportation

D. Methods

Who was responsible for primary construction (visiting workers vs. locals, paid vs. volunteer)
Level of construction education/experience (citizens vs. tradespeople)
If uneducated, methods of teaching (basic demonstration vs. classroom)
Hierarchy of workers (who took direction from whom)
Availability of hand tools vs. electric tools (source of power)

E. Climate

Geographic location
Flood history
Seasonal temperature high/low averages
Relative humidity

F. Enveloping

Open or closed envelope
Type of cladding system
Wall composition
Thermal properties
Relationship of envelope to structure

G. Heating/cooling/lighting

Site orientation chosen in relationship to sun paths and wind forces
Passive cooling techniques
Shading systems, effects on solar heat gain during summer and winter months

H. Landscaping

Landscape strategies used in relationship to sun paths and wind forces
Plant species

I. Structural

Primary building structure
Treatment of shear and moment forces
Methods of joinery between members

J. Acoustics

Methods of mitigating sound transmission between classrooms
Material/finish treatment of reverberation within each classroom
<table>
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<tr>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
<th>Week 4</th>
<th>Week 5</th>
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<tr>
<td>Introductory meeting with advisors to discuss site, logistical and economic issues, scope of work, past challenges, etc.</td>
<td>Conceptual design charrette following in-depth review of reference documentation of relevant projects</td>
<td>Conceptual design charrette following in-depth review of reference documentation of relevant projects</td>
<td>Schematic design charrette responding to research and schematic design refinement</td>
<td>Refinement of schematic models in preparation of design development (DD) issue</td>
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<tr>
<td>Introduction of research topics to be explored at the local, regional, and national scale and compiled into presentable format for studio education</td>
<td>Supporting research of materials, logistics, environmental systems, etc.</td>
<td>Supporting research of materials, logistics, environmental systems, etc.</td>
<td>BIM study model mockups for presentation of schematic design</td>
<td>Design development (DD) documentation and supporting research</td>
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<th>Week 6</th>
<th>Week 7</th>
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<tr>
<td>Design development (DD) documentation and supporting research</td>
<td>Design Development issue due for approval by Secretary of Education and GP</td>
<td>Construction documents in preparation of 95% CD issue</td>
<td>Construction documents in preparation of 95% CD issue</td>
<td>Construction documents in preparation of 95% CD issue</td>
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<td>Final Progress meeting with engineers/advisors prior to DD issue</td>
<td>Progress meeting with engineers/advisors in preparation of CD issue</td>
<td>Progress meeting with engineers/advisors for refinements for working drawings and response from Ministry of Education</td>
<td>Progress meeting with engineers/advisors for refinements for working drawings and response from Ministry of Education</td>
<td>Progress meeting with engineers/advisors for refinements for working drawings and response from Ministry of Education</td>
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<th>Week 11</th>
<th>Week 12</th>
<th>Week 13</th>
<th>Week 14, 15+</th>
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<tr>
<td>Construction documents in preparation of 95% CD issue</td>
<td>95% CD issue due</td>
<td>Thanksgiving Break</td>
<td>Travel for Construction</td>
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<tr>
<td>Progress meeting with engineers/advisors for refinements for working drawings and response from Ministry of Education</td>
<td>Completion of research publications, independent study publications, and additional graphics and documentation pending response from engineers/advisors/Ministry of Education.</td>
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Industrial Design

- How do tactile and visual relationships with furniture, fixtures, and equipment influence the human perception of space and inspire learning?
- How can the design of educational FF&E inform the organization and configuration of classroom space, building massing, enveloping, lighting, and ventilation to frame interaction between students, and between students and teachers?
- How can industrial design challenge the conventional classroom typology, specifically within the logistic and economic confinements of a third-world region?
- What are opportunities to create design solutions with a potentially limited palette of available materials, specifically recycled materials, and with unskilled labor?

Areas for exploration:

Student desk and chair
Lighting fixtures
Door and window
Teaching media
Fixtures for student latrine
Bookshelves and storage
Acoustic fixtures
Playground equipment
Shading devices
Tectonics of building envelope
Landscaping - Fixtures for interior and exterior vegetation
Potable water containment
Developmental Instruction

Students develop proficiency with a range of digital and manual skills during the studio. The instruction advances design and documentation during the project, is carried into future academic studio work, and prepares each student for entering the field.

A. “Drawing Without Calculation”

The course provides intensive training on effectively translating three dimensional spaces from the visual field onto paper. Students learn processes and techniques to intuitively construct perspectives without the use of measurement, properly frame interior and exterior space, portray genuine depth in drawing, and manipulate space on paper. Developing a greater comfort in drawing supports studio work in both process and presentation, improves the speed and quality of documentation during study abroad, and sharpens communication skills in the field.

Lessons on one, two, three, and multi-point perspective, dividing space in perspective, establishing orientation of body and eye, contrast of value, hierarchy of point, line, and plane, and composition are heavily emphasized throughout the course.
B. Building Information Modeling

Students are given daily instruction in Building Information Modeling (BIM) platforms and implement lessons during design and in production of drawings at each phase of the project. Lessons in Revit aid the process of design and increase efficiency during documentation. By introducing BIM at the beginning of design, a central model will be implemented within the design team to allow for live linking between students as building modifications are made. Drawings sets will be completed with BIM platforms.
Abstract

Students are immersed in the business of architecture at a multitude of scales, specifically, the financial, ethical, and contractual relationships between architects, clients, contractors, consultants, governing authorities, and the public. The trajectory from internship to licensure, specialty, and leadership forms the contextual framework for understanding professional liability and ethical responsibility at each relative career stage.

A series of lessons, guest lectures, interviews, and office visits provides a multi-faceted insight into the field of architecture. Satisfaction of course objectives is evaluated through comprehensive responses to such lesson formats, including documentation of interviews and lectures.

Course Objectives:

+ Develop an understanding of project delivery methods, parties necessary to facilitate construction, and contractual obligations and authorities of respective parties.

+ Define objectives and relationships of project phases, including: bidding, code review, programming, conceptual design, schematic design, design development, construction documents, and construction administration.

+ Analyze internal office structures with regard to management, design and production, specifically the roles and responsibilities of the executive, sector leader, office director, senior designer, project manager, project architect, job captain, construction administrator, junior staff, and administrative staff.

+ Understand the process of determining architectural fees, management of funds, contingency, and insurance.
With a thriving arts culture, Richmond offers a delicate balance between an urban and small-town character. The fan, Shockoe Bottom, Church Hill, VCU Monroe Park, Canal Walk, Tobacco Row, Belle Isle, Capitol Hill, Maymont, and the James River are year-round places to explore. With close proximity to Washington, DC and Virginia Beach, Richmond has been a popular location among students and young professionals.
Left: Virginia State Capitol
Bottom-Left: Canal Walk
Top-Right: Belle Isle
Center-Right: Shockoe Bottom
Right: First Friday’s Art Walk