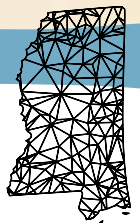




GRADES 9-12



# **902110 PYTHON<sup>®</sup> 1 (COMPUTER SCIENCE FOUNDATIONS)**

PROPOSAL BY PITSCO EDUCATION #100196-1

8/27/24



# CONTENTS

<b>LETTER OF INTEREST .....</b>	<b>1</b>
<b>COMPANY PROFILE.....</b>	<b>2</b>
<b>PROGRAM DESIGN PROPOSAL .....</b>	<b>7</b>
<b>HOW WE CAN WORK TOGETHER.....</b>	<b>13</b>
<b>CONTACT INFORMATION .....</b>	<b>14</b>





## RONNIE THOMAS

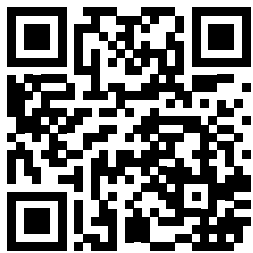
### SOUTHEAST EDUCATION ADVISOR

800-835-0686, ext. 4560

rthomas@pitsco.com

20 Years of Experience

#### BOOK A MEETING WITH RONNIE



# LETTER OF INTEREST

Thank you for the opportunity to present a custom program we have designed that aligns directly to the goals of Mississippi Department of Education.

At Pitsco Education, we aim to provide hands-on learning opportunities for learners and support for educators in their endeavors to create future problem solvers, offer career exploration opportunities, and create a foundation for future success.

The program we have outlined is hands on, includes engineering design process challenges, and exposes students to a number of future careers.

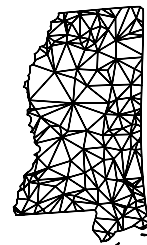
However, if this design doesn't hit the mark, we have a team of program designers who can make the necessary updates and select the standards-based curriculum, hands-on projects, and professional development from our comprehensive range of STEM and CTE resources to create a tailored, turnkey solution that best addresses the needs of Mississippi students and teachers.

Access to review the curriculum will be sent from Mastery Coding to Elizabeth Simmons, BA, MLIS, EdS, Instructional Materials and Library Services Director (Office of Elementary Education and Reading, [esimmons@mdek12.org](mailto:esimmons@mdek12.org)).

If you have any questions regarding the information enclosed or if you would like to request further information, please do not hesitate to contact me at any time. Thank you for your time and consideration.

Sincerely,

Ronnie Thomas  
Southeast Education Advisor



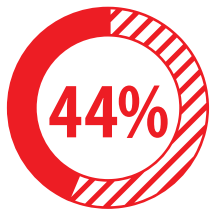


# STEM REDEFINED

STEM is so much more than science, technology, engineering, and math. STEM is aha moments. It's failure. It's collaborating with peers. It's social-emotional learning. It's making. It's robotics. It's coding. It's career exposure. It's flexible learning environments. It's development and practice of essential life skills.

**And it's preparing students for a future we can't yet describe.**

**3**  Currently serving  
**MILLION+**  
students annually



More than  
**44%** of our  
customers  
have been  
customers for  
**20 years**



# WHO WE ARE

Pitsco Education is a leader in future-ready learning fundamentally rooted in STEM. Our competency-based and collaborative hands-on solutions effectively integrate core disciplines while helping learners master the transferable collaboration, critical-thinking, and problem-solving skills that will last a lifetime and translate to any college or career path.

For more than 50 years, Pitsco Education has offered a comprehensive range of scalable hands-on resources and curriculum. We help educators create learning environments that address all learning styles and help all students find success while solving problems, being creative, articulating ideas, and thinking with their hands.

# OUR GOAL

To make it easy for schools to bring these materials to the classroom to create lifelong learners, successful professionals, and engaged citizens.

We promise to remove barriers, to bring cutting-edge education technology into the classroom, and to help teachers find new, relevant ways to do what they do best.



**LIFELONG  
LEARNERS**



**SUCCESSFUL  
PROFESSIONALS**



**ENGAGED  
CITIZENS**

  
**1,000+**  
different careers  
to explore within  
our curriculum

We provide  
curriculum  
professional  
development for  
an average of  
**800**  
teachers annually



More than  
**50**  
*Years!*  
serving  
educators



# OVERVIEW

The terms and circumstances of human existence are expected to change exponentially during our children's lives. A 21st-century, STEM-proficient workforce will be at the center of this change – causing it, shaping it, responding to it – because the primary driver of our future lies largely in the advances in science and engineering from those equipped with a collaborative, problem-identifying/problem-solving mindset.

While most career and technical education programs focus on high school students, Pitsco Education's STEM programs build a pipeline of STEM learners, beginning early to hone students' 21st-century skills and establish a solid foundation for future careers. Along the way, students acquire the requisite language and skills sets to jump directly into more immersive experiences such as internships that continue the progression of learning, helping students achieve success at their chosen next stop – college or career.



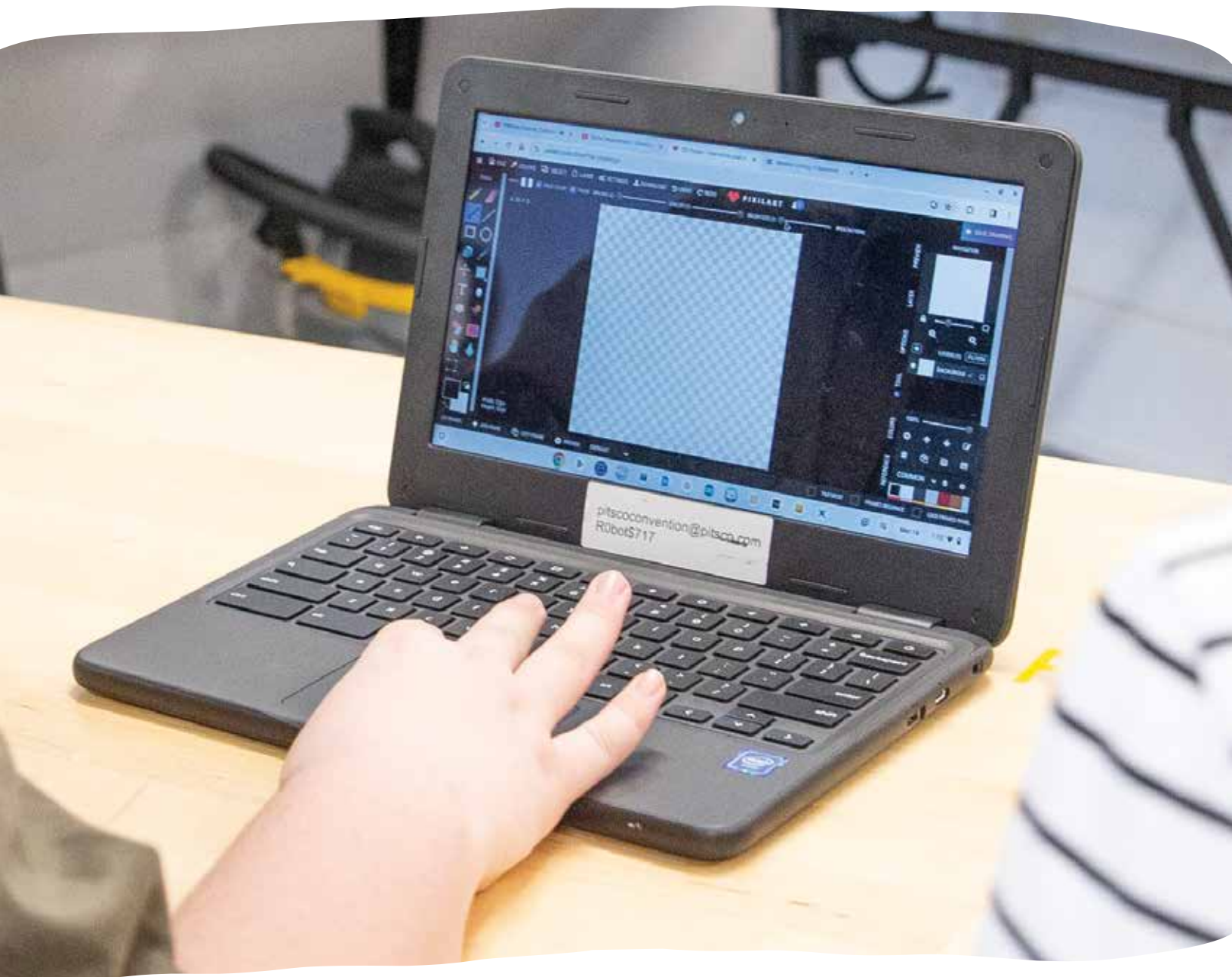
# A PROGRESSIVE CTE EXPERIENCE

Pitsco Education's proprietary and partner curricular programs put a piece of the world in students' hands and ask, "How does this apply to your life?" Hands-on exploration and project-based learning extend across the curriculum and connect the classroom to careers. This has been a guiding ideal in Pitsco's philosophy since the company's founding more than 50 years ago.

Pitsco Education's solutions prepare students for a lifetime of critical thinking, collaboration, and creative problem-solving in the context of rigorous and future-relevant learning. Preparing the next generation for the future requires meeting young people where they are. It gives students a platform and structure to gain and practice the knowledge and skills required in a 21st-century workplace. It's equipping teachers with the understanding and mindset required to manage this type of future-relevant learning environment that produces independent critical thinkers.

Equally as important as the technical skills students will need are the soft skills necessary to accept and engage with changes caused by the fast-paced growth of technology. According to the Organisation for Economic Cooperation and Development (OECD), to succeed in the future workforce, “students will need to develop curiosity, imagination, resilience, and self-regulation; they will need to respect and appreciate the ideas, perspectives, and values of others; and they will need to cope with failure and rejection, and to move forward in the face of adversity” (*The Future of Education and Skills: Education 2030*).

Pitsco Education brings all of this together through experiential learning and helps prepare students with a skill set that can help them be successful no matter their career choice. The products and programs outlined in this document were carefully chosen to increase Computer Science literacy and workforce development skills for Mississippi students.





# YOUR CUSTOM DESIGN

**Curriculum for Mississippi Department of Education** creates learning opportunities that build the collaboration and problem-solving skills needed for a lifetime of learning and working, enables students to make connections among the four areas of STEM learning, and immerses students in the technology of the future. The following chart provides a listing of the titles and products included as part of your custom design along with the recommended grade levels for each.

## MISSISSIPPI DEPARTMENT OF EDUCATION

GRADES 9-12
CODING
902110 Python® 1 (Computer Science Foundations)

CODING

## PYTHON® 1

This course is a comprehensive course designed for middle and high school students, offering an engaging introduction to computer science and programming with a focus on Python®. The course covers essential programming concepts, including Python syntax, variables, data types, control structures, loops, and basic algorithms. Students will also explore more advanced topics such as data structures, file I/O operations, functions, object-oriented programming, and Python modules. The course prepares students for the Certiport IT Specialist Programmer Exam, IT Specialist Computational Thinking, and PCEP Certified Entry-Level Python Programmer certifications through hands-on projects and analysis techniques. Additionally, it includes an exploration of the history and societal impact of computing and fundamental software design principles.

**ENVIRONMENT:** Computer Science solutions require a collaboration-ready environment that accommodates students working in pairs and individually. This is the responsibility of the district.

## FOUNDATIONS LICENSE

### 902110 PYTHON® 1 (COMPUTER SCIENCE FOUNDATIONS)

Each course in our Foundations line is designed with accessibility as a core principle. Students can complete the entirety of these courses on the web.

#### OPERATING SYSTEM

- Chromebook: Chrome OS 100.0 or later  
Windows: 7, 8, 8.1, 10 or later
- Mac: OS X El Capitan 10.11 or later
- Linux: 64-bit Ubuntu 18.04+, Debian 10+, openSUSE 15.2+, or Fedora Linux 32+

#### SOFTWARE INSTALLED

- Google Chrome

#### HARDWARE

- RAM: 4GB or more
- CPU: Pentium 5 or later

#### PERIPHERALS

- 13" or bigger display
- Full keyboard
- Three-button mouse with scroll wheel
- Headphone jack and headphones

#### SITES TO WHITE LIST

- [masterycoding.com](https://masterycoding.com)
- [player.vimeo.com](https://player.vimeo.com) (optional)
- [techterms.com](https://techterms.com)
- [developer.mozilla.org](https://developer.mozilla.org)

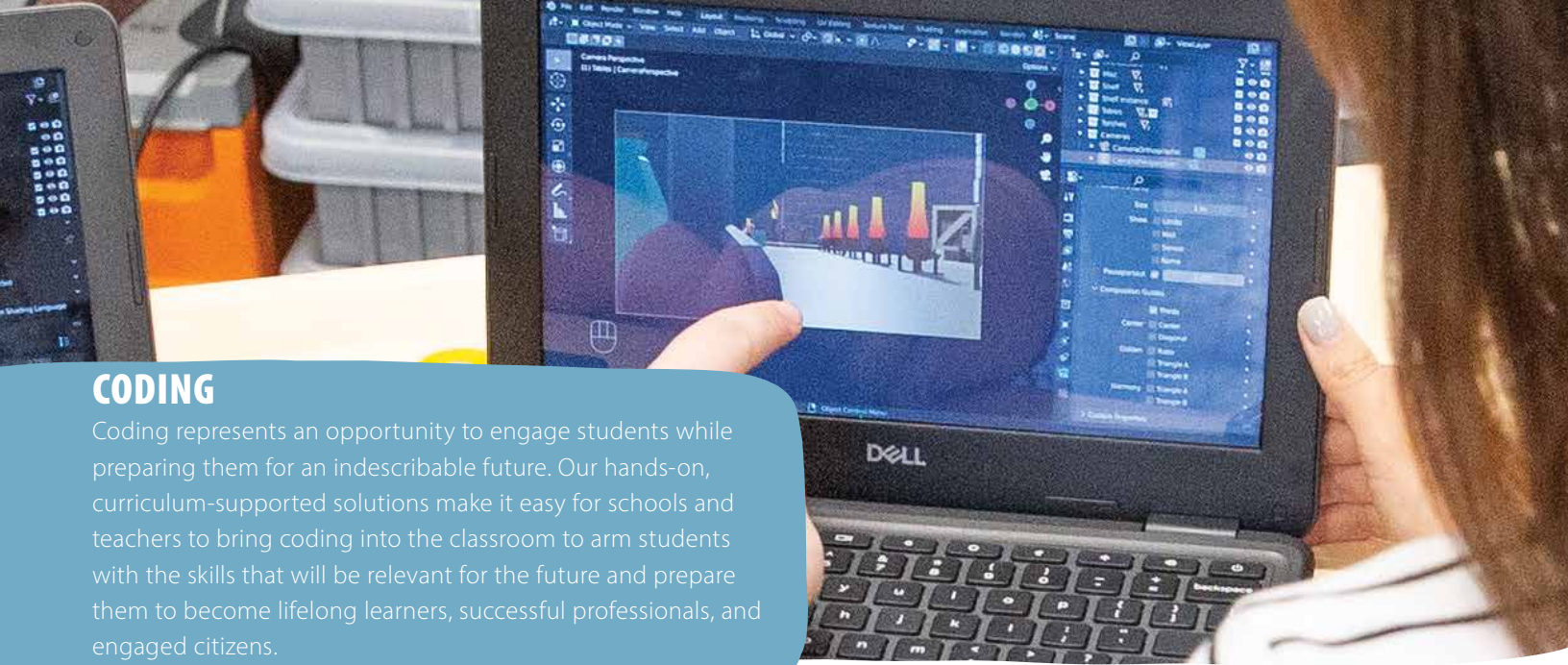
#### For Web Dev Foundations

- [codepen.io](https://codepen.io)\*

#### For Game Dev Foundations

- [pixilart.com](https://pixilart.com)\*
- [vscode.dev](https://vscode.dev)

\*Students are recommended but not required to create accounts on CodePen and Pixilart to save their works and have an online portfolio.



## CODING

Coding represents an opportunity to engage students while preparing them for an indescribable future. Our hands-on, curriculum-supported solutions make it easy for schools and teachers to bring coding into the classroom to arm students with the skills that will be relevant for the future and prepare them to become lifelong learners, successful professionals, and engaged citizens.

# PYTHON® 1

(COMPUTER SCIENCE FOUNDATIONS BY MASTERY CODING™)

## GENERAL OVERVIEW

This course is a comprehensive introduction to computer science and programming, designed for middle school and high school students. Through engaging projects and clear, step-by-step guidance, students will learn to code in Python® while exploring the exciting world of computer science.

This course covers fundamental programming concepts and aligns to the Certiport IT Specialist Programmer Exam, IT Specialist Computational Thinking, and the PCEP Certified Entry-Level Python Programmer certifications.



## COURSE OBJECTIVES

In this course, students will:

- Learn Python basics, including syntax, variables, and data types, setting a foundation for programming.
- Explore control structures, loops, and basic algorithms, enhancing problem-solving skills.
- Understand data structures and file I/O operations, crucial for practical Python applications.
- Delve into functions, object-oriented programming, and Python modules, advancing coding proficiency.
- Study the history and societal impact of computing, along with fundamental software design principles.
- Prepare for Certiport IT and PCEP Python Programmer exams through hands-on projects and analysis techniques.



# 902110 PYTHON 1 COURSE SCOPE AND SEQUENCE

## COURSE SCOPE AND SEQUENCE

### UNIT 1: WHAT IS CODE?

Students start their journey into computer science by learning the basic principles of coding including variables, control structures, and basic collections.

#### CHAPTERS

- **Chapter 1: Hello World (Duration: 2 hr 30 min)**
  - Students are introduced to the absolute basics of coding by creating simple programs using variables, print statements, and sequential control structures.
- **Chapter 2: Operations (Duration: 2 hr 30 min)**
  - Students refine their understanding of how code is executed by identifying the core components of code: operators and operands.
- **Chapter 3: Conditional Logic (Duration: 2 hr 30 min)**
  - Students are introduced to a new type of control structure – Selection Logic – and learn how to handle branching control flow with conditions and logical/comparison operators.
- **Chapter 4: Loops and Lists (Duration: 2 hr 30 min)**
  - Students learn about the third fundamental control structure, Iterative Logic, while working with loops and lists.

# COURSE SCOPE AND SEQUENCE

## UNIT 2: WHAT IS DATA?

Students dive deeper into the fundamentals of computer science, examining how computers use data to represent real-world information.

### CHAPTERS

- **Chapter 1: Bits and Bytes (Duration: 2 hr 30 min)**
  - Students start to investigate the inner workings of computers by examining how computers store information using bits, bytes, and data types.
- **Chapter 2: Data Types (Duration: 2 hr 30 min)**
  - Students refine their understanding of variables and data by working more closely with Python's different data types.
- **Chapter 3: Collections (Duration: 2 hr 30 min)**
  - Students learn about fundamental Python collections such as dictionaries.
- **Chapter 4: Input/Output (Duration: 2 hr 30 min)**
  - Students start building their first real programs accepting user input and reading/writing files.

# COURSE SCOPE AND SEQUENCE

## UNIT 3: WHAT IS A PROGRAM?

Building on their understanding of coding and computer science fundamentals, students start writing more complex programs.

### CHAPTERS

- **Chapter 1: Functions (Duration: 2 hr 30 min)**
  - Students learn about decomposition as they start writing larger programs, which will require them to plan and organize their code.
- **Chapter 2: Objects (Duration: 2 hr 30 min)**
  - Students learn the basics of Object Oriented Programming by introducing objects and classes to their code.
- **Chapter 3: Modules (Duration: 2 hr 30 min)**
  - Students learn how to incorporate existing modules into their code, expanding the possibilities of their programs.
- **Chapter 4: Writing Programs (Duration: 2 hr 30 min)**
  - Students learn more about testing, debugging, and exception handling as they start working on their first complex programming project.

# COURSE SCOPE AND SEQUENCE

## UNIT 4: WHAT IS COMPUTER SCIENCE?

With a strong foundation in coding, students are ready to take their first steps into the larger world of computer science, introducing topics such as testing, software design, algorithms, and data structures.

### CHAPTERS

- **Chapter 1: Algorithms and Data Structures (Duration: 2 hr 45 min)**
  - Students begin their further exploration of computer science by learning about fundamental data structures including stacks, queues, and hashmaps, as well as the fundamentals of algorithms and algorithmic analysis.
- **Chapter 2: Networks and the Internet (Duration: 2 hr 30 min)**
  - Students learn about the basic structure and workings of computer networks and the Internet.
- **Chapter 3: Computing System Principles (Duration: 2 hr 45 min)**
  - Students learn about the basics of computing system principles including the components of hardware/software interaction, operating systems, and computer architecture.
- **Chapter 4: Exploring Computer Science (Duration: 2 hr 15 min)**
  - In this final chapter, students learn about some of the many potential avenues a career or interest in computer science can offer.



# SCHOOL-WIDE SERVICES

**TECHNICAL SUPPORT:** Pitsco Education's team of experienced technical support representatives ensure the labs remain operational and fully functioning. They're on-site for installation, so they understand the unique nature of each lab and treat it as such. They are a call, chat, or email away.

**PROFESSIONAL DEVELOPMENT:** Mastery Coding's team offers professional development to meet the needs of all districts and schools. This proposal includes :

- **LAUNCH TRAINING:** Get set up with the award-winning curriculum and courseware, including live virtual training, curriculum overview, and courseware setup.
- **ONGOING LIVE TRAINING:** Get live access to the Mastery Coding team at regular intervals.
- **ON-DEMAND SUPPORT:** Get quick answers whenever you need them. All teachers have access to the Mastery Coding online forums. These feature: 24-hour response time, community discussions, and feedback and troubleshooting.

# HOW WE WILL WORK WITH YOU

We not only strive to deliver quality STEM and CTE programs, we aim to go above and beyond for our customers. We want to make sure we are not only meeting your current education goals, but also setting you, your teachers, and your students up for future success. We are building more than just labs. We want to build strong relationships that will last a lifetime.



## **A GOOD LISTENER AND LIFELONG PARTNER**

You deserve a close and attentive working relationship with a responsive and available team. We take genuine interest in each and every school and district we work with and strive to give you more for your dollar. Knowing your current and future goals and expectations enables us to better support and serve you throughout the design and implementation processes.



## **TAILORED PROGRAM DESIGN**

We're not just a provider of STEM/CTE products, curricula, and programs; we go the extra mile for our customers, listening to your needs and customizing solutions that help you meet your objectives. Through goal-focused communication with an emphasis on student success, our Program Design team works hand in hand with our education advisors and your school or district to outline programs that fit into your CTE initiative.



## **RIGOROUS PROFESSIONAL DEVELOPMENT**

Pitsco professional services include professional development to ready the teacher to facilitate the lab and then ongoing services in the following months and years. These services are designed to provide opportunities to build relationships and a strong knowledge base and to ensure implementation fidelity. The goal is to ensure the teacher is fully equipped to provide a successful experience for all students.



## **EDUCATIONAL AND TECHNICAL SERVICES**

Caring customer service is something we always strive to provide. We have worked hard to create a service network that offers customers professional, personal support. Whether it be through our internal service, our field service representatives, or one of our education advisors who represent us around the country, we hope to get to know you and better meet your needs.



# OFFICE LOCATION

## PITSCO EDUCATION

P.O. Box 1708

Pittsburg, KS 66762

Pitsco.com

# WHY PITSCO

- Long-term Partner
- Tailored Program Design
- Lifetime Customer Support
- Professional Development Services
- Timely and Comprehensive Installation
- Industry Leader for 50+ Years



## RONNIE THOMAS

800-835-0686, ext. 4560

rthomas@pitsco.com

**“Your curriculum is deeper. You deliver 21st-century skills that truly teach kids how to not just look at the content but also be able to communicate and work collaboratively. And there is no comparison to your customer service.”**

Cary Johnson, K-12 director of innovation and technology,  
Placentia-Yorba Linda Unified School District, CA

