

**Dr. Mary Davidson STEM Camp Courses 2025**  
**8<sup>th</sup>-10<sup>th</sup> grades for 2025-2026 school year**

**ABC's of the ACT**

Taking the ACT is required for admission to the Mississippi School for Mathematics and Science and a good score often leads to better scholarships for college. In this class, you will learn how to sign up for the ACT, what you can expect to see in each section of the test, review content, and apply tips and tricks for improving your speed and accuracy.

**An Exploration of Photography**

This class will explore a variety of photographic techniques ranging from alternative process photography, to the current use of digital techniques, and also basic photo editing. Students will have an opportunity to develop photographic works in multiple mediums as well as gain an understanding for the photographic process.

**Bet On It**

Throughout history, cultures have used different types of dice to make decisions and play games. When should you roll again? Should you call the bluff? Cut your losses while you can? We will explore dice games and activities, while we learn the math associated with them.

**Discovering Japan through Japanese Anime**

Do you like Japanese anime or Japanese culture in general? Have you ever thought about having a chance to learn some Japanese language, try some Japanese food and sweets, and learn about its culture and traditions here in Mississippi? My name is Franco Lopes, and I lived half of my life in Japan working as a translator, baker, and teacher. We will use Japanese Original Manga (Japanese comics) and anime to discover specific aspects of Japanese culture such as food, clothing, and specific Japanese expressions that do not translate well into English. You will learn how to introduce yourself and to use cultural Japanese greetings. This course will help you broaden your cultural understanding of the world.

**Eat Your Words!**

From restaurant critics to cookbook writers, mouthwateringly vivid novelists to medical researchers, cultural historians to health inspectors, all sorts of people write about food in all sorts of ways. In this class, we'll read, write, and taste a tantalizing sampling.

**Engineering and Teamwork**

Discover the engineering process and foster your teamwork skills through hands-on activities. Students will work with new partners each day to create cargo containers, a mountainous road, a payload mover, and bore through Mount MSMS.

## **The Face of STEM**

What does a STEM (Science, Technology, Engineering, and Mathematics) professional look like? Not the stereotype! From math to physics to biology to chemistry, we will consider the life and work of famous **women** in STEM as we do what they did: chemistry, biology, physics, astrophysics, computer science, and more.

## **Fractal Frenzy**

The participants will enjoy exploring and making various fractal structures in nature and how to identify them. They will construct geometrical and random fractal structures via artwork and computer codes. We will explore number patterns that emerge from Sierpinski's triangle, the Koch snowflake, the Mandelbrot set and others. We will also explore number chaos theory and how it applies to fractals.

## **Going Global: Turning Data into Information**

The need to address emerging challenges in public health, sustainability, and other global issues is more pressing than ever. In this class, use real scientific databases and statistics to model our reality, identify specific problems, and then work in teams to turn data into information. Mathematics and life sciences meet in this interdisciplinary course.

## **Krypto Kraze**

Have you ever wondered how to create a secret code for a message, so it is easy to decode but difficult to crack? This course will familiarize students with commonly used cryptography terms, guide students through encoding and decoding messages using different ciphers. Students will use mathematics through modular arithmetic and multiplication to decode messages. This course will also discuss the history of coding in various themes. By the end of this course, students will gain better reasoning and problem-solving abilities.

## **Mystery of Forensic Science**

Have you ever wondered how evidence is collected to help bring criminals to justice? Does learning about different techniques and skills used by forensic scientists and crime scene investigators sound interesting to you? Join us as we perform ink chromatography, gel electrophoresis and forensic entomology to solve a few cases of our own!

## **No Experience Needed Coding**

Looking for all students who are interested in computer programming or playing with Robots but have little to no experience. Learn how to program the Sphero Robot and challenge yourself to guide the Sphero through 5 challenging courses/obstacles.

## **Poetic Forms**

Ever wondered what dactylic hexameter is? Ever aspired to write a sonnet or to spot a villanelle in the wild? Ever wanted to create your own poetic form? In this class, we'll use both creative reading and curious writing to explore traditional poetic forms, concrete poetry, experimental poetic constraints, erasure poems, and more.

## **Robotics**

Robotics is the fusion of Computer Science and Engineering, and in our camp, we will give students the opportunity to experience both. The Robotics course will teach students the basics of computer programming logic while solving a larger problem.

## **STEM in Living Color**

African American STEM professionals including doctors, engineers, mathematicians, and entrepreneurs made history and continue to shape the future of Mississippi and the United States of America. Learn about their contributions while you experience their fields of expertise, including history trivia, an engineering challenge, data collection, knot tying, chemistry, and more.

## **Stop-Motion Storytelling**

Get creative! Stop-motion animation combines creative writing, technology, art, and music to tell stories one frame at a time. In this class, you will learn how to create stop-motion animation with 2D and 3D images. Not of a fan of drawing? Not a problem! From paper cutting to play-dough modeling, you will work in teams to meet the objective of the day.

## **Wild and Weedy: An Introduction to Historical Medicine**

This course will focus on the traditional use of plants and herbs for healing from a Native American perspective. Before the advent of modern medicine, Early Americans used their knowledge of the land to treat ailments and heal their sick. Knowledge of which plants were poisonous and which were helpful were passed down for generations and many are still used to this day (or they are if you have a grandmother like mine). Topics would include the identification and preparation of various medicinal plants, their specific uses for treating ailments, and the knowledge passed down through generations. The class would explore how plants were used for a wide range of conditions, from pain relief to digestive issues, and how Native American cultures viewed plants as part of a larger holistic approach to health.

## **Writing Science Fiction**

In this creative writing class, we'll look at examples of writing that makes the everyday seem strange and the alien or futuristic feel familiar. We'll learn techniques for developing characters and points of view, building worlds, creating plotlines, adjusting tension, and more. By the end of the week, you'll have written at least one full-length sci fi story, and you'll have lots of ideas to take with you!