

## ABSTRACT

The need for interdisciplinary work is growing [1, 2]. Current literature in education, psychology, and philosophy highlights the importance of artistic approaches in science, medicine, and engineering [3, 4, 5, 6], particularly as advancements in computer science automate the more mechanical aspects of discovery [7]. Additionally, one of the most pressing issues facing society today is that of scientific, and more broadly academic, literacy [8]. Inherent in this is the notion of science communication, which in turn raises the question of what it means to effectively understand and articulate a concept. Creative and visual approaches provide alternative means of communicating scientific ideas [9, 10], while evidence from computer science education suggests that visual, creative, and engaging learning environments can improve student performance, retention, and attitudes toward learning [11, 12]. This document describes the images appearing in our banner and cites sources and artists.

### 01 Cyborg Mona Lisa

**EXPLANATION.** Leonardo da Vinci's Mona Lisa depicted as a cyborg.  
**SOURCES.** Artwork by Alexis Ellis, PhD Student at Wright State.

### 02 DNA

**EXPLANATION.** DNA is the basic building-block of earth-based life. It is composed of four nucleotide bases: adenine, thymine, guanine, and cytosine.

**SOURCES.** Getty Images courtesy of Arizona State University News: Science and Technology.

<https://news.asu.edu/20190409-discoveries-asu-dna-primer-ask-biologist>

### 03 Brain-Graph

**EXPLANATION.** You know what a brain is!

**SOURCES.** Edited from an image appearing in promotional material by the University of Michigan's recently discontinued ArtsEngine program.

<https://artsengine.engin.umich.edu/>

### 04 Vitruvian Man

**EXPLANATION.** A drawing by Leonardo da Vinci dated to c. 1490. The text depicted in the banner is also from this photograph.

**SOURCES.** Photograph by Luc Viatour - <https://Lucnix.be> courtesy of Wikimedia Commons.

<https://commons.wikimedia.org/>

### 05 Suspension Bridge

**EXPLANATION.** A drawing of a suspension bridge displaying the civil engineering principles involved.

**SOURCES.**

<https://erkrishneelram.wordpress.com/2015/03/12/suspension-bridge/>

### 06 Graph Curvature

**EXPLANATION.** The round geometric structure and the equation above it refer to *curvature* and graph theory. There are open questions in mathematics research surrounding this topic, some of which is being done right here at Wright State!

**SOURCES.** Equation and image were sourced from two papers listed in the references page [13, 14].

Special thanks to Dr. Daniel Slilaty, mathematics professor at Wright State for introducing this topic.

### 07 Earth

**EXPLANATION.** A drawing of the earth.

**SOURCES.** Artwork by Rebecca Castro

[https://www.instagram.com/kastro\\_arts/](https://www.instagram.com/kastro_arts/)

### 08 Caffeine and Serotonin

**EXPLANATION.** Chemical structure of caffeine and serotonin.

**SOURCES.** Sourced from Wikimedia Commons.

<https://commons.wikimedia.org/>

### 09 Apple II Schematic

**EXPLANATION.** A diagram of some of the hardware components of the Apple II designed by Steve Wozniak.

**SOURCES.**

<https://mirrors.apple2.org.za/ftp.apple.asimov.net/documentation/hardware/schematics/6502BLOCKDIAHIRES.jpg>

### 16 $E = mc^2$

**EXPLANATION.** Einstein's equation  $E = mc^2$  expresses the equivalence of mass and energy: the energy of an object is equal to its mass multiplied by the speed of light squared.

**SOURCES.** Image sourced from FreeVector.

<https://www.freevector.com/vector/e=mc2>

### 11 Musical Score

**EXPLANATION.** An excerpt of Felix Mendelssohn's Wedding March

**SOURCES.** <https://www.alamy.com/>

### 12 EKG / PQRST Complex

**EXPLANATION.** An electrocardiogram (EKG) records the electrical activity of the heart. The P wave represents atrial depolarization, the QRS complex represents ventricular depolarization, and the T wave represents ventricular repolarization.

**SOURCES.** Reference image sourced from Google Images.

<https://www.google.com/search?q=ekg+drawing>

### 13 Fibonacci Spiral

**EXPLANATION.** A visualization of the Fibonacci spiral, formed from quarter-circle arcs arranged within squares whose side lengths follow the Fibonacci sequence.

**SOURCES.** Sourced from Wikimedia Commons.

<https://commons.wikimedia.org/>

### 14 Fibonacci Sequence Code

**EXPLANATION.** Code to generate the  $n^{th}$  term in the Fibonacci sequence written in the C programming language using recursion.

**SOURCES.** Obtained from Computer Organization course material, a class at Wright State University.

### 15 Donated Coursework

**EXPLANATION.** Physics equations showing charge forces and LC-3 assembly code.

**SOURCES.** Homework completed and donated by David Castro from Physics II at Sinclair Community College and Computer Organization at Wright State.

### 10 Paint Brushes

**EXPLANATION.** A drawing of paint brushes.

**SOURCES.** Sourced from Pinterest:

<https://pinterest.com/pin/967499932448104653/>

## References

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