

OPEN LAB NIGHT

November 13, 2024

5:00 - 8:00 PM



**Center for the Advancement
of STEM Education**





Welcome to Open Lab Night!

Please note that children must be accompanied by adults at all times.

Please return safety glasses to the Park Avenue exit to receive a prize. Glasses can also be returned to the registration area or to return bins located at the building exits.

Community Terrarium Building

Come to the Greenhouse to help build a community terrarium that will live in the DMF Science Building! Be one of many who will contribute to this enclosed ecosystem by adding growing media, plants, or insects. The goal is to create a sealed terrarium that will be self-sufficient and will not need to be watered!

Age Group: All Ages
Where: Greenhouse
Time: Drop-in



Cyber Detectives

Come learn about BSU's Cyber Range - a new state-of-the-art cybersecurity training space! Put your problem-solving skills to the test as you decode encrypted information.

Age Group: Grades 4-12
Where: DMF 122
Time: Every 15 minutes



Make your Own Buttons and Stickers

Join us to see how stickers and buttons are made, and to create your own! We will guide you through the process, from design to creation. You will see how the Cricut cutting machine works to produce stickers and also create your own unique stickers using blank sticker sheets that you color. Then, you can explore button making using pre-cut blanks and our button press to create your own artistic design!



Age Group: All Ages
Where: DMF 130
Time: Drop-in

Play-Dough Core Sampling

Ever wonder how geoscientists actually study Earth's crust? Here is your chance to find out! Core sampling is just one of many ways that scientists can see what inside the earth looks like. Join us in practicing with play dough and make observations like a real scientist!



Age Group: All Ages
Where: DMF 174
Time: Drop-in

Fossils, Fossils, Everywhere!

Ever wondered how fossils form and where to find them? Come to our room to perform an experiment about how different fossils form and get to see real-life fossils of all different shapes, sizes, ages, and types.

Age Group: All Ages

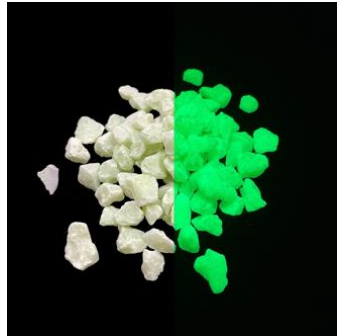
Where: DMF 176

Time: Drop-in



Glow-in-the-Dark Rocks

Ever heard the phrase "dumb as rocks"? We're here to tell you that there is a lot more to rocks than meets the eye! Discover some of the fun and strange, beautiful and peculiar properties that minerals can have ... including some that glow in the dark!



Age Group: All Ages

Where: DMF 180

Time: Drop-in

Chemistry of Ice Cream

Make homemade ice cream while learning the science behind it. Please note that dairy products are used in this activity.

Age Group: All Ages
Where: Park Ave. Hallway
Time: Every 20 minutes



Map It Out: Massachusetts Exploration

Dive into the Bay State like never before! Explore our giant floor map through interactive activities and discoveries that highlight Massachusetts' landmarks, history, and geography. Whether you're a local or a visitor, this hands-on activity promises fun for all ages. Don't miss this unique opportunity to see Massachusetts from a whole new perspective! **Socks are required** - no shoes or bare feet on the map.



Age Group: All Ages
Where: DMF 200 – Second Floor Lounge
Time: Drop-in

WiFi Fun: Build a Pointy Antenna

This project builds and tests a WiFi radio antenna that is directional and designed to allow sending 2.4GHz signals (2,400,000,000 vibrations per second) further than the antennas in typical home Internet wireless routers. The concept is similar to a flashlight that has a reflector(mirror) behind the light source and a lens in front of it.

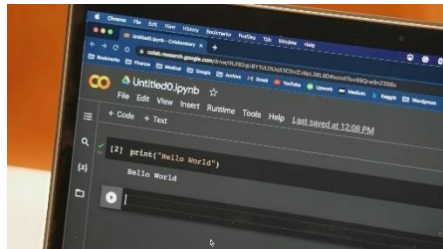


Age Group: Grades 5-12
Where: DMF 222
Time: Every 20 minutes

Game On! Video Games and Python

If you love videogames and are curious to learn an aspect of how they're made, we can show you! You can also try to create part of a game as you enter the wonderful world of computer science.

Age Group: Grades 5-12
Where: DMF 230
Time: Drop-in



Turtle Codes: What is Turtle Drawing Now?

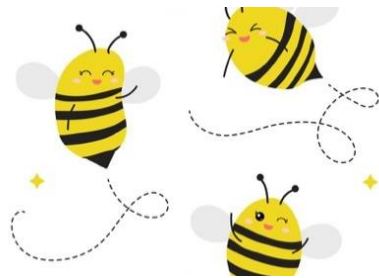
In this activity, we will have time to play with a virtual turtle to create several drawings. The turtle will move and draw lines depending on how participants set up computer codes (turtle codes). They will build the codes using physical puzzle blocks, and via this activity, they will understand how to set up a computer algorithm to do a given task.



Age Group: All Ages
Where: DMF 260
Time: Every 30 minutes

Pollination Power

Bees unite! "Pollination Power" is an exciting hands-on activity where you will be able to become a buzzing bee and pollinate our flower garden! Grab a bee stick and see how much power you and bees all over the world have just through their pollination abilities! Buzzzzzzzzzz.....



Age Group: All Ages
Where: DMF 261
Time: Drop-in
Activity Ends: 7:00 PM

Animal Party

This activity is all about being open-minded and having fun! It's a playful way to explore how animals behave in their environment through creative and interactive demonstrations. Let's dive into the wild and see how animals adapt and thrive in their habitats! Who's ready for some wildlife fun?

Age Group: All Ages
Where: DMF 261
Time: Drop-in
Activity Ends: 7:00 PM



Water Plant Art

Lions, Tigers and Bears oh my! Let's take a look at the environment where animals live. Watercolors and stickers are provided.

Age Group: All Ages
Where: DMF 261
Time: Drop-in
Activity Ends: 7:00 PM



Magic Soak Up

Get ready for the "Magic Soak-Up Experiment"! In this fun project, watch colorful water magically creep up a paper towel, defying gravity and creating mesmerizing patterns. Discover capillary action—the same process plants use to drink water—and see how simple materials can perform amazing tricks. Perfect for curious minds and easy to try at home!

Age Group: All Ages
Where: DMF 267
Time: Drop-in
Activity Ends: 7:00 PM



What Lies Beneath the Water?

Use microscopes and magnifiers to spy into the creepy, crawly world of underwater aquatic insects. You will be shocked at what you find!

Age Group: All Ages
Where: DMF 267
Time: Drop-in



DNA and Data Security

Join us for a fun, hands-on activity where you'll create your own secret code using gummy bears! Learn how DNA works as a code in nature and see how we can use that idea to make encrypted messages, just like in cybersecurity. You'll get to use candy to make the 'DNA' pattern and discover how to keep messages safe with your own creative touch. Come be a scientist and a code-cracker all in one!

Age Group: Elementary and Middle

Where: DMF 275

Time: Drop-in



Fruit-Powered Science

Dive into the world of energy with our lemon battery activity! You'll learn how to turn lemons into a source of electricity using copper and zinc. This hands-on project is not only fun but also teaches you about chemical reactions and circuits. Join us for a zesty experience that combines science and creativity!



Age Group: All Ages

Where: DMF 280

Time: Drop-in

The Ultimate Flight Test

In this fun hands-on activity, you'll design and build your very own paper airplane and see how far it can fly. Experiment with different shapes and weights, then test your creation against your friends' designs! Discover the science of aerodynamics while having a blast. Are you ready to soar?

Age Group: All Ages
Where: DMF 280
Time: Drop-in



Trapping DNA With Light

Did you know that you can trap objects with light? Just like you take out splinters from your hand with tweezers you can tweeze tiny objects with light. The set up that is designed with lasers to do this is known as optical tweezers. Optical tweezers can be used to trap biological molecules like DNA. This technique won the Nobel Prize in 2018. You will be able to see how optical tweezers are used to trap DNA during this activity.



Age Group: All Ages
Where: DMF 282
Time: Every 30 Minutes

Breaking Wind Challenge

Wind hazards can cause serious damage to trees, homes and people. Join us in the BSU Wind Tunnel Lab for an evening of testing the limits of buildings and other structures. How much wind can it take before it breaks? Can you improve it to survive a hurricane wind! Where is the safest place in a house?

Age Group: All Ages

Where: DMF 287

Time: Every 30 minutes



Unveiling the Hidden Colors With the Polarization of Light

Discover the hidden world of light polarization in this interactive activity! Using simple materials like transparent tape and polarizing filters, participants will witness how light can be transformed into vibrant colors. You'll also explore the photo elastic effect by bending clear plastic objects to reveal stress patterns through colorful interference. This hands-on experiment demonstrates the fascinating interplay between light, materials, and mechanical forces, offering a visual and engaging introduction to the science of polarization.

Age Group: All Ages

Where: DMF 290

Time: Every 20 minutes



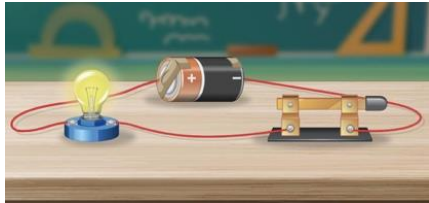
Snap Circuits and Vintage Game Consoles

Come join the Computer Science department and learn how to make your own electronic circuit! Or you can explore some vintage (1970s) video game systems!!

Age Group: All Ages

Where: DMF 294

Time: Drop-in



Strawberry DNA Isolation

Did you know that strawberries are very special plants when it comes to DNA? They have 8 sets of DNA molecules, whereas most organisms, including humans, have only two. That feature makes strawberries the perfect source of DNA and one of the very few examples when isolated DNA can be easily observed with naked eye. Smash a strawberry or two, release DNA using a dishwashing detergent and catch it with the help of ice-cold rubbing alcohol and a barbecue skewer. Repeating at home with family and friends is always an option.

Age Group: All Ages

Where: DMF 390

Time: Every 30 minutes

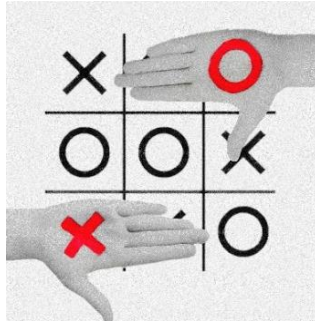


Ultimate Tic-Tac-Toe

Two players. We have three levels of tic-tac-toe: regular tic-tac-toe for beginners, Super tic-tac-toe for those who want a bigger challenge, and Ultimate tic-tac-toe for the ultimate challenge.

Appropriate for all ages.
Teaches problem solving,
logical thinking, and
strategizing.

Age Group: All Ages
Where: DMF 442
Time: Drop-in



FUN-ction Machine

One player with guide or two players. Students will put a number into the function machine and another number will come out. After several tries, the student will try to guess the function. Teaches numerical operations, precursor to functions and patterns.

Age Group: All Ages
Where: DMF 461
Time: Drop-in



Frogs in the Pond

In this RIBBIT-ing math game, players will practice their counting, addition, subtraction, and early algebra skills. One player with guide or two players.

Age Group: All Ages

Where: DMF 463

Time: Drop-in



Monster Squeeze

One player and guide or two players. Given a number line, students will guess a number in a range. The guide will return "the hidden number is greater than/less than your guess" and the monsters will squeeze the number line to include only the subdivision indicated. Guessing continues until the correct guess is made.



Age Group: All Ages

Where: DMF 465

Time: Drop-in

Make Your Own Lava Lamp

Learn about and see the chemistry behind what makes a lava lamp work, convection current, and make your own lava lamp to bring home.



Age Group: All Ages
Where: DMF 477
Time: Every 20 minutes

Elephant Toothpaste

Make elephant toothpaste by mixing yeast and hydrogen peroxide.

Age Group: PreK-Elementary
Where: DMF 481
Time: Every 20 minutes



Using Mutant Worms to Study Human Disease

Come explore the world of a favorite model organism, *C. elegans*, aka "worms"! There will be multiple mutant worms that you can view under the microscope and even try your hand at poking and picking them up with a handmade tool. These mutant worms are used in biomedical research to understand human diseases that are caused by mutations in genes similar to those found in the worms. Learn about those diseases and match the mutant worm to the disease it is used to study



Age Group: All Ages
Where: DMF 482
Time: Drop-in

Invisible Ink

Participants will have an opportunity to write and decode secret messages on a piece of cardstock and learn about acidic and basic compounds.

Age Group: PreK-Elementary

Where: DMF 477

Time: Every 20 minutes



Make Your Own Oobleck

Create Oobleck which is a non-Newtonian fluid that changes its state of matter under high and low pressure.

Age Group: PreK-Elementary

Where: DMF 481

Time: Every 20 minutes



Observatory

The observatory will be open to the public from 6:00-9:00 PM.

Weather allowing, we'll view

Saturn, the Moon, nebulae, star clusters, double stars, and

galaxies through our telescopes

on the 5th floor observation decks. In the case of clouds,

we'll give tours of the observatory's research dome and

feature some of our astrophotography.

Age Group: All Ages

Where: 5th floor Observation Decks

Time: 6:00-9:00 PM



2025 Winter Science Academy

Center for the Advancement of STEM Education at Bridgewater State University



The Center for the Advancement of STEM Education at Bridgewater State University is excited to offer a Winter Science Academy. Participating middle school students attend the *Forensics Institute of Bridgewater (FIB)*, an exciting hands-on class in which students act as crime scene analysts. Working with Senior Scientists, students learn how to collect and analyze fingerprints from a simulated crime scene, perform blood type analysis, and get closer to solving the mystery using DNA fingerprinting.

Dates & Times: February 18–21, 2025 (Tuesday-Friday), 8:30 AM–2:30 PM

Location: Dana Mohler-Faria Science and Mathematics Center, Bridgewater State University

Program Fee: \$250

This program is designed for students currently in grades 6–8.

Limited scholarships are available to students who demonstrate significant financial need and academic merit.

For session descriptions and additional information including discounts and scholarships, please visit the [Science Academy Website](#).



Thank you to the many BSU students, faculty, and staff for sharing their excitement about STEM. In addition, thank you to the Bartlett College of Science and Mathematics and Bridgewater State University for your continued support of our community outreach programs.

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