

The Driver Alcohol Detection System for Safety (DADSS) Discovery Hub

Virginia Highway Safety Summit

May 4, 2022

DRIVEN^{TO}PROTECT
POWERED BY DADSS

dadss 
Driver Alcohol Detection System for Safety

Speakers



Kianna Pirooz

Clinical Investigator,
KEA Technologies



Maura Campbell

Research Assistant,
KEA Technologies

Today's Agenda

1. Overview of the DADSS Technologies
2. Discovery Hub
3. Resources for Educators and Students



Technology that will Save Lives

DADSS Program partners include:

- Automotive Coalition for Traffic Safety (ACTS), a Virginia nonprofit funded by the world's leading automakers
- U.S. Department of Transportation's National Highway Traffic Safety Administration (NHTSA)
- Virginia Department of Motor Vehicle's Highway Safety Office
- KEA Technologies Inc. is the program manager

Every year in the U.S., drunk driving claims approximately **10,000 lives**.

In 2021, Virginia reported 4,224 alcohol-related injuries and 247 alcohol-related fatalities on its roadways.



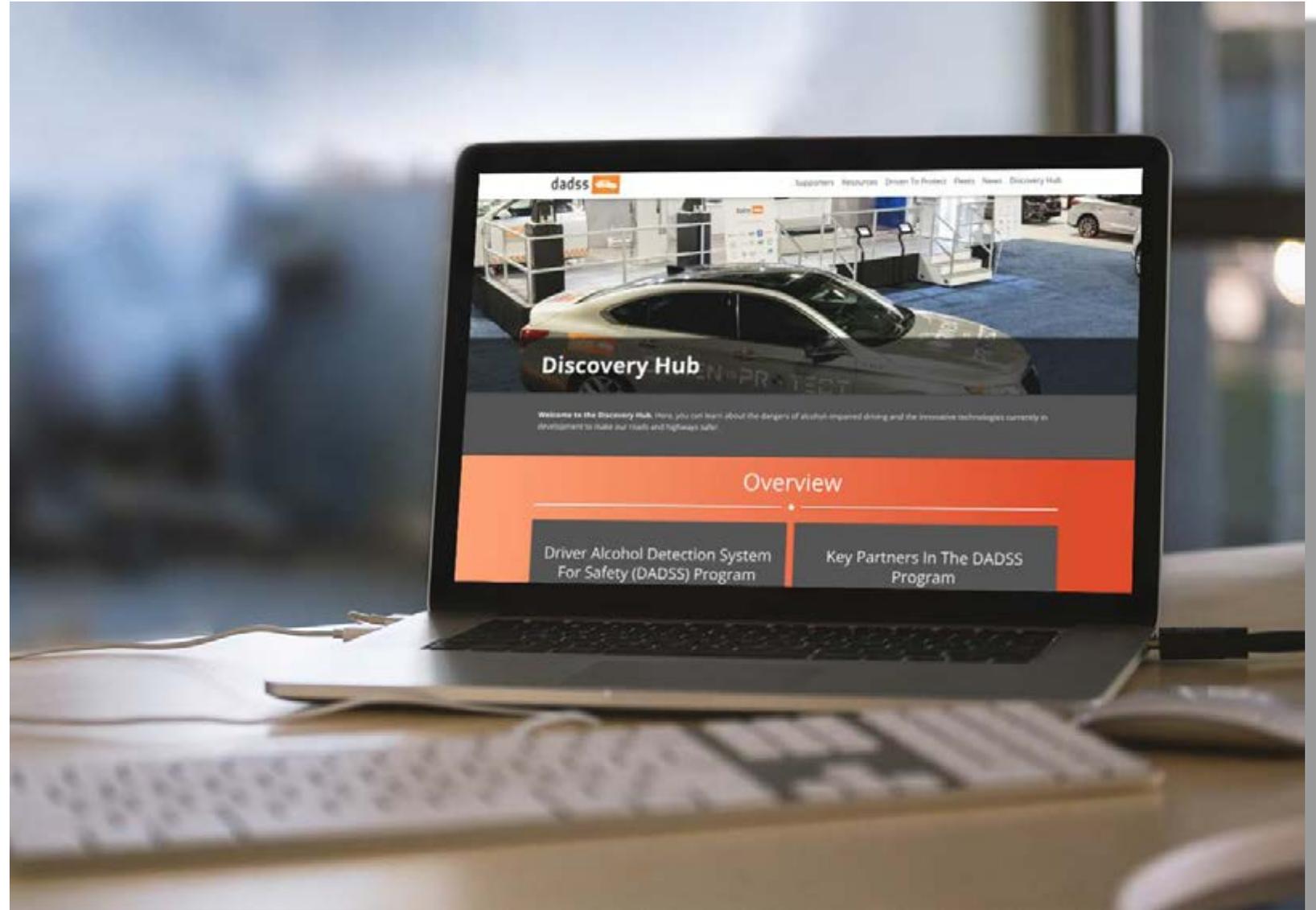
The Driven to Protect Initiative

Virginia is the first state to partner with the DADSS Program through the Department of Motor Vehicles, demonstrating their commitment to technological innovation and leadership in the fight against drunk driving.



The Driven to Protect Discovery Hub

In 2020, in collaboration with the Virginia DMV and the Department of Education, Driven to Protect launched the Discovery Hub, a virtual learning platform with a series of STEM lessons that put students in the shoes of the engineers and data analysts working on the DADSS technology.



Overview

Driver Alcohol Detection System For Safety (DADSS) Program

DADSS is a first-of-its-kind, vehicle-integrated, alcohol detection technology. By passively detecting a driver's blood alcohol concentration (BAC), it prevents a car from moving while the driver's BAC is at or above the legal limit of 0.08%.

This technology must meet rigorous performance standards before it can be installed in cars or trucks. When ready, it will be offered to vehicle owners as a voluntary safety option, much like other driver-assist systems (i.e., automatic emergency braking or lane departure warning systems).

Key Partners In The DADSS Program

DADSS Program partners include:

- Automotive Coalition for Traffic Safety (ACTS), a Virginia nonprofit funded by the world's leading automakers
- U.S. Department of Transportation's National Highway Traffic Safety Administration (NHTSA)
- Virginia Department of Motor Vehicle's Highway Safety Office

The DADSS Program is one of the most important government and private sector partnerships in recent years. Private partnerships like DADSS have led to innovations that enhance our everyday lives, such as internet, GPS, and the microchip.

DADSS Driven To Protect Discovery Hub

The learning modules below allow you to:

- Explore how alcohol is absorbed, processed and eliminated by the human body
- Learn how alcohol impairs your ability to safely operate a motor vehicle
- Obtain actionable information so you can avoid the dangers associated with drunk driving
- Find out how the novel DADSS technologies currently under development and testing will protect you and other motorists on the road in the future

There are also Science, Technology, Engineering, and Math (STEM) modules available so students can learn about the science and engineering behind the DADSS technologies.

General Education Modules

The Brain, Lungs, and BAC (What's their role in Driving)

[START LESSON](#)

Alcohol Impaired Driving Informational

[START LESSON](#)

Alcohol Fact or Fiction

[START LESSON](#)

Breath and Touch Alcohol Detection Systems

[START LESSON](#)

Underage Alcohol Use and Zero Tolerance Law Informational

[START LESSON](#)

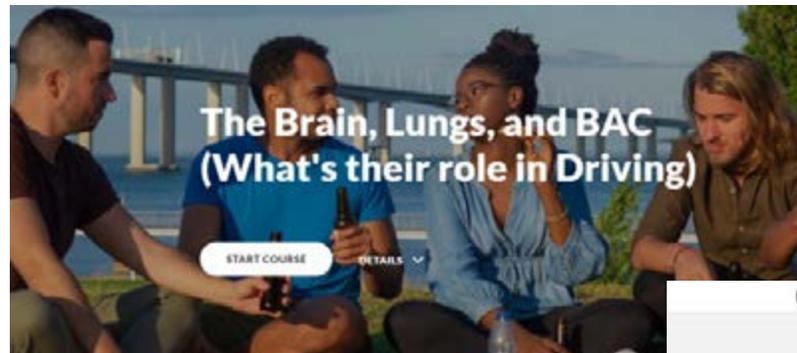
General Education Modules

The Discovery Hub's General Education modules provide students with important information about how alcohol is absorbed by the body and its effects on one's ability to drive safely.

The modules also include lessons about the extent and scope of, as well as the laws to mitigate drunk driving in Virginia.

General Education Modules:

- The Brain, Lungs, and BAC (What's their role in driving)
- Alcohol Impaired Driving Informational
- Alcohol Fact or Fiction – Kahoot!
- Breath and Touch Alcohol Detection Systems
- Underage Alcohol Use and Zero Tolerance Law Informational ←



Example Lesson

The 'Underage Alcohol Use and Zero Tolerance Law Informational' module provides students with information about the extent and scope of underage drinking, alcohol-impaired driving, and Virginia's zero-tolerance law for underage drivers.

The module focuses on risks and potential consequences associated with alcohol-impaired driving, along with actionable information about how to avoid these risks and the benefits that the Driven to Protect Initiative and the DADSS Program provide.



In this lesson, students will learn....

- 1 The consequences and statistics of underage drinking and alcohol-impaired driving.
- 2 Students will learn about the zero-tolerance law in Virginia.
- 3 Students will learn about the Driven to Protect Initiative, the DADSS Technologies, and their benefits.

Lesson Features

When you click on any module on the Discovery Hub, the module will open in a new tab.

You'll see an overview of the purpose of the module, followed by each lesson in the chapter.

Each module closes with a summary of key takeaways—reinforcing both the subject matter and the importance of ending alcohol-impaired driving

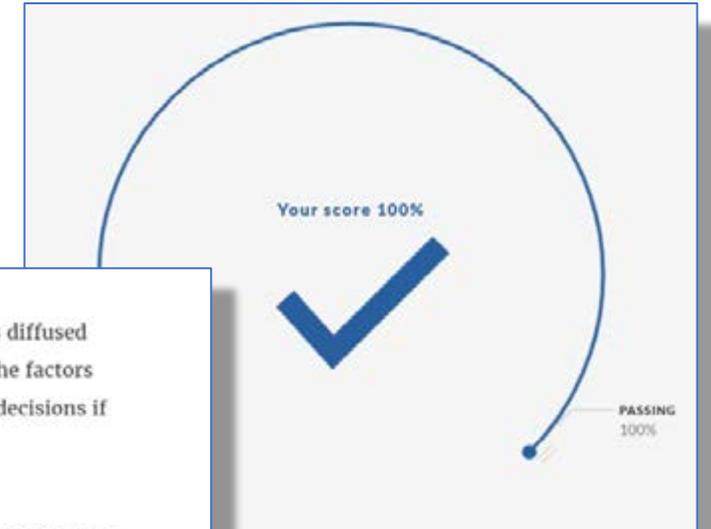
Learning features:

- Overview of each module to provide context for students
- Learning objectives
- Comprehension checks
- Summary of key takeaways

Key Takeaways

This lesson classifies alcohol and shows how alcohol is diffused through the body and its associated effects. Many of the factors presented are important to know to make responsible decisions if choosing to consume alcohol.

- 1 Alcohol is defined as a central nervous system depressant.
- 2 Alcohol moves through the bloodstream to the major organs, like the heart and lungs.
- 3 Understanding the definition of a standard drink, especially across different types of alcohol.
- 4 Defining blood alcohol levels (BAC) and the associated predictable effects people may experience at each level.



STEM Modules

STEM Part 1: Spectroscopy

[START LESSON](#)

STEM Part 2: The DADSS Benchtop Unit

[START LESSON](#)

**STEM Part 3a: Data Collection and Analysis
(Basic)**

[START LESSON](#)

**STEM Part 3b: Data Collection and Analysis
(Advanced)**

[START LESSON](#)

STEM Modules

The STEM modules can help students learn about the science and engineering behind the DADSS technologies. The modules include interactive learning activities and hands-on experiments for students to do in the classroom or at home.

Discovery Hub STEM Lessons:

- STEM Part 1: Spectroscopy
- STEM Part 2: The DADSS Benchtop Unit
- STEM Part 3a: Data Collection and analysis (Basic)
- STEM Part 3b: Data Collection and analysis (Advanced)

At the completion of this lesson the learner will:

- 1 Learn how data are collected in a field trial.
- 2 Meaningfully describe the data using statistics.
- 3 Understand the concepts of false-positives, false-negatives, sensitivity and specificity in the context of a screening tool like the DADSS breath alcohol sensor.
- 4 Understand the real-world implications of implementing a breath alcohol sensor based on the measures of performance.

Educational Videos

On the Discovery Hub landing page, you'll find a video bank with a series of educational videos about the DADSS program and Driven to Protect Initiative, the DADSS alcohol detection system, and how The DADSS Partnership is working to eliminate drunk driving.

The screenshot shows a video player interface for an educational video. The main video frame displays a 3D rendering of a car's interior with a crash test dummy seated in the driver's seat. Two labels with lines pointing to specific areas are visible: "BREATH-BASED SYSTEM" pointing to the dashboard area and "TOUCH-BASED SYSTEM" pointing to the center console. A red play button is centered over the dummy. The video player includes a title bar at the top with the text "Breakthrough Invention Aims to Eliminate Drunk Driving" and a YouTube logo. A "Watch on YouTube" button is located at the bottom left of the video frame. Below the main video frame is a horizontal strip of seven small thumbnail images. At the bottom of the player, the title "Breakthrough Invention Aims to Eliminate Drunk Driving" is repeated. A blue circular logo with the letters "V.O.A." is positioned in the bottom right corner of the video frame.

Driven to Protect on Virtual Virginia

Virtual Virginia: <https://virginiainlearning.catalog.instructure.com/>

- ❑ We are reaching educators and students through our collaboration with the Virginia Department of Education
- ❑ All of the lessons mentioned above on the Discovery Hub are available on Virtual Virginia, which is a continuing education platform for teachers



The screenshot shows the Virtual Virginia interface for the course "DADSS Educational Modules - VDOE/DMV". The course is marked as "FREE" and "Started Mar 23, 2021". A blue "ENROLL" button is visible. The course title is displayed in a large blue box with the "DRIVEN TO PROTECT" logo and "POWERED BY DADSS | VIRGINIA" text. The top navigation bar includes "About Virtual Virginia", "Outreach Program", and "Login".



The screenshot shows the Virtual Virginia interface for the course "DADSS and the STEM Partnership - VDOE/DMV". The course is marked as "FREE" and "Started Mar 26, 2021". A blue "ENROLL" button is visible. The course title is displayed in a large blue box with the "DRIVEN TO PROTECT" logo and "POWERED BY DADSS | VIRGINIA" text. The top navigation bar includes "About Virtual Virginia", "Outreach Program", and "Login".

Additional Opportunities for Educators and Students

- Virtual or in-person Q&A with members of the DADSS team to discuss the alcohol detection technology and safe driving
- In-person field trip to the DADSS lab in Leesburg, VA



Questions or Ideas?

For more information, visit www.dadss.org/discovery-hub

Follow us on Twitter [@DrvnToProtectVA](https://twitter.com/DrvnToProtectVA)

DRIVEN TO PROTECT
POWERED BY DADSS

