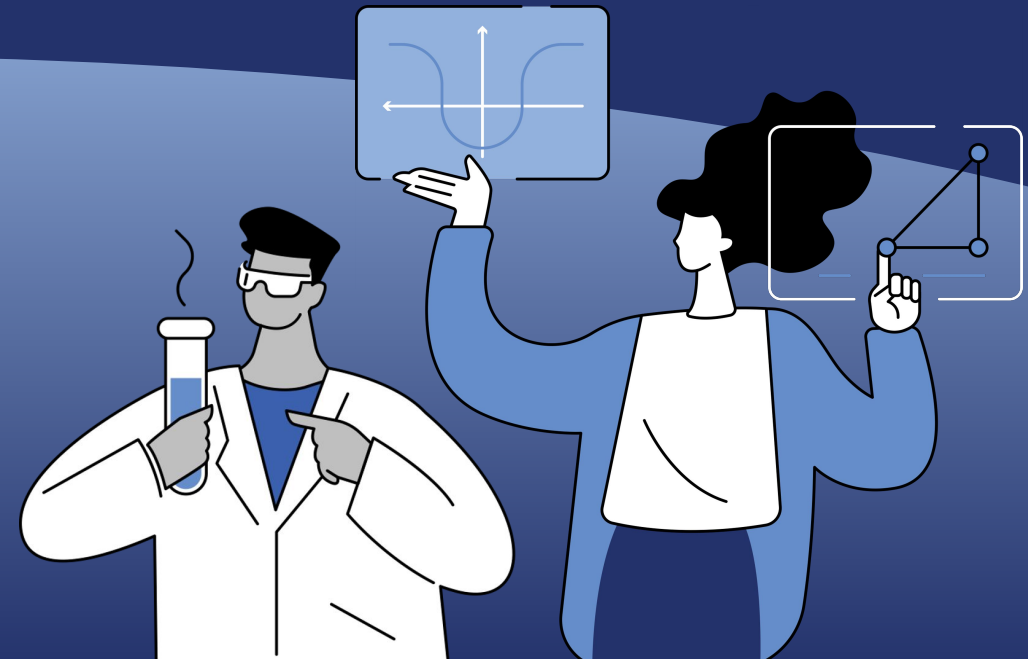
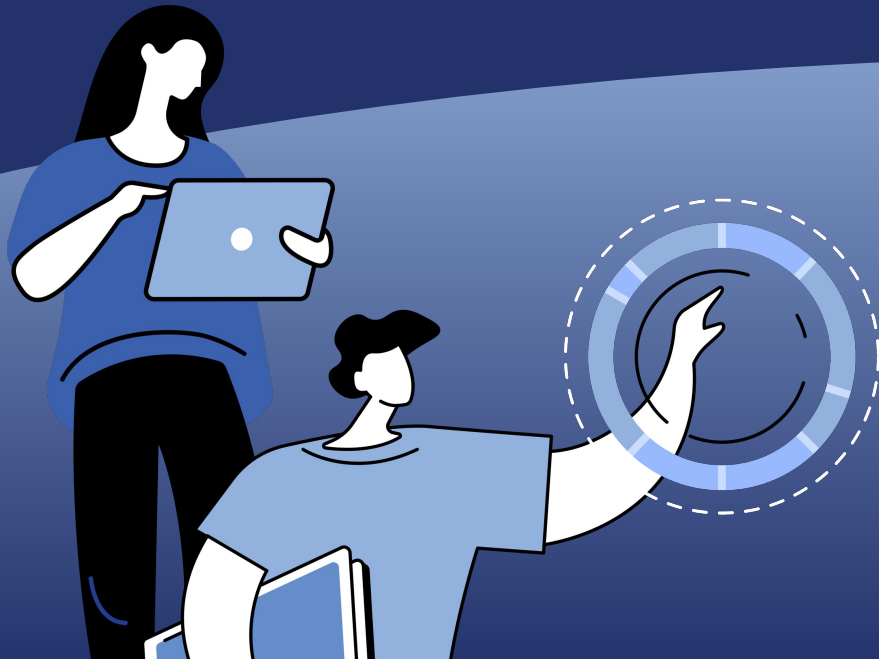




**Tonka Career
and Technical
Education** 

Student Registration '24-'25

Winter 2024

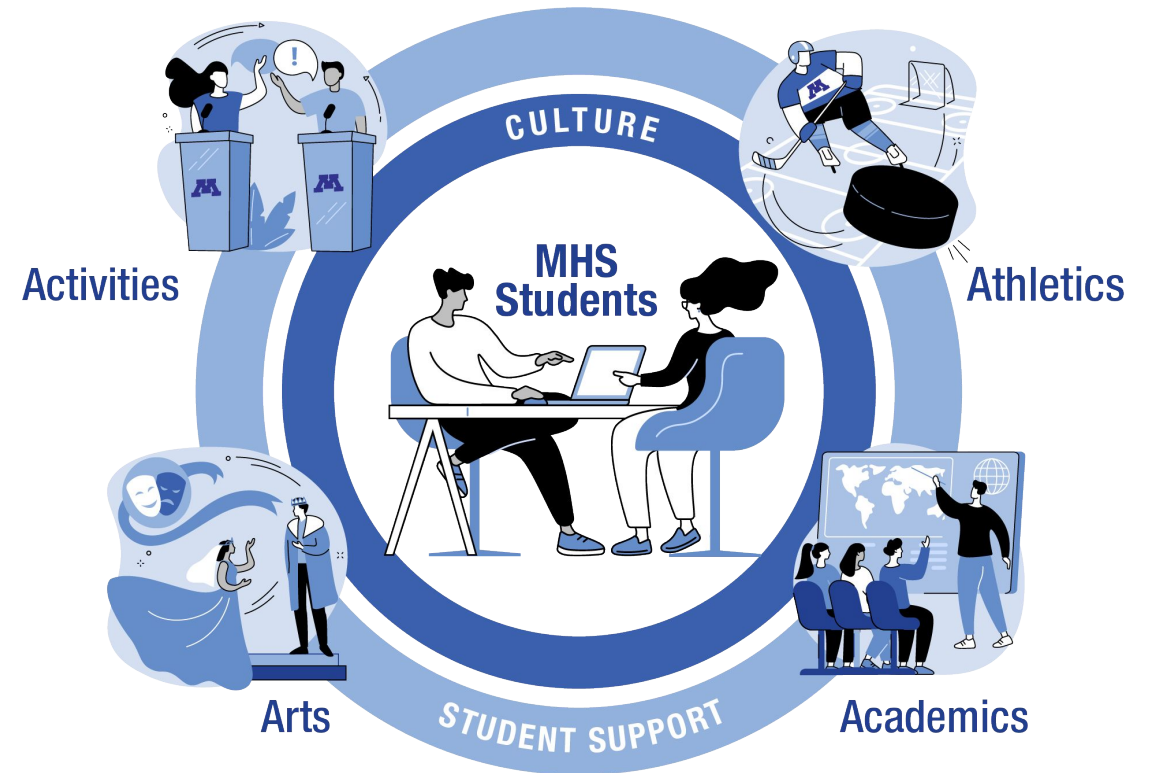


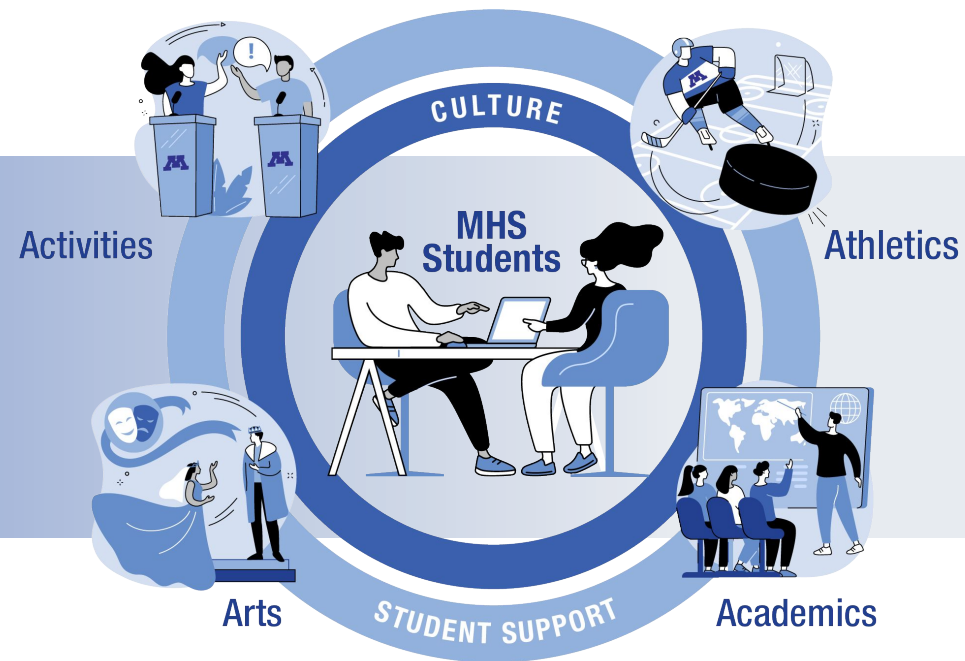
THE STUDENT EXPERIENCE

Students feel a strong sense of inclusion and belonging in the school community that is grounded in respectful and caring relationships.

Students engage in learning environments that promote curiosity, critical thinking, authentic learning, and collaboration.

Students are inspired and challenged to explore their passions through new learning experiences and making connections beyond the classroom.





TONKA
<CODES>



MINNETONKA
Language Immersion



TonkaOnline

A SCHOOL OF OPPORTUNITIES



VANTAGE
MINNETONKA ADVANCED PROFESSIONAL STUDIES



**MINNETONKA
RESEARCH**

MOMENTUM
MINNETONKA DESIGN AND SKILLED TRADES



Strong Relationships

grounded in a positive,
caring, connected,
respectful community



Meaningful, deep,
authentic, challenging,
and engaging with high
expectations and support

Exceptional Instruction



Successful, respectful,
curious, happy,
engaged

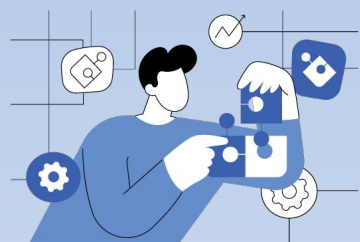
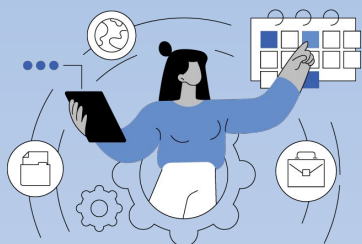
Students





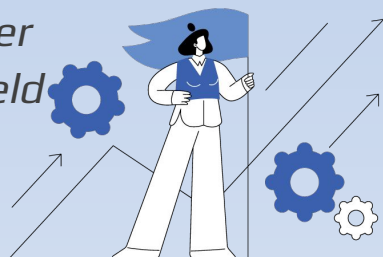
Experiential Learning at MHS: For every student

Engage students to apply learnings in a specific area to real-life situations.

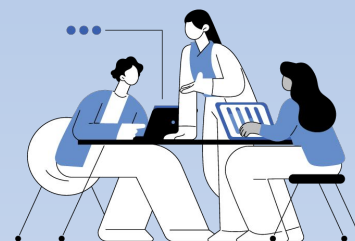
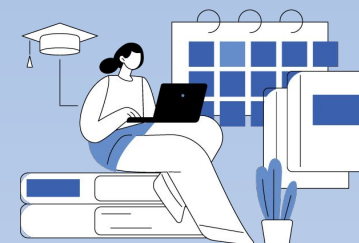


Encourage next-generation leaders to use their knowledge, curiosity, and creativity for career opportunities.

Help students develop power skills appropriate for their field of study (communication, collaboration, leadership, problem-solving).

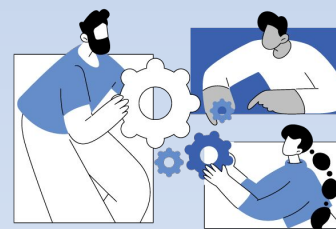
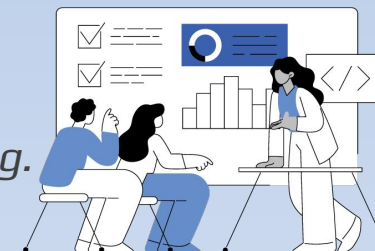


Develop courses and opportunities that expand students' options beyond high school (certifications, CIS, AP, IB).



Empower teachers to make connections outside of education.

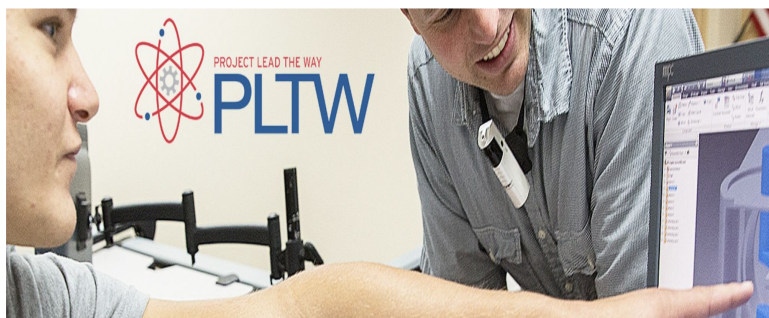
Create a real-world setting where students have ample space, support, and tools for learning.



Connect students with the broader community for learning and networking.



Three Extraordinary Learning Models



**Tonka Career
and Technical
Education**





“I really love seeing **real world examples** and doing **real stuff**. I’ve learned more in the past 2 months than I have in a whole school year.”

-MHS 10th Grader

“The **hands on learning** and unique topics help make an **engaging environment** that makes for a **great class**.”

-MHS 12th Grader

“There a lot of **field trips** that are actively engaging and also a lot of **guest speakers**.”

-MHS 12th Grader

“The **teachers** have all been **great**...and they make the classes very smooth and **fun**”

-MHS 12th Grader

From our 2023-2024 students



2023-2024 Momentum Students: Are you enjoying your Momentum experience?

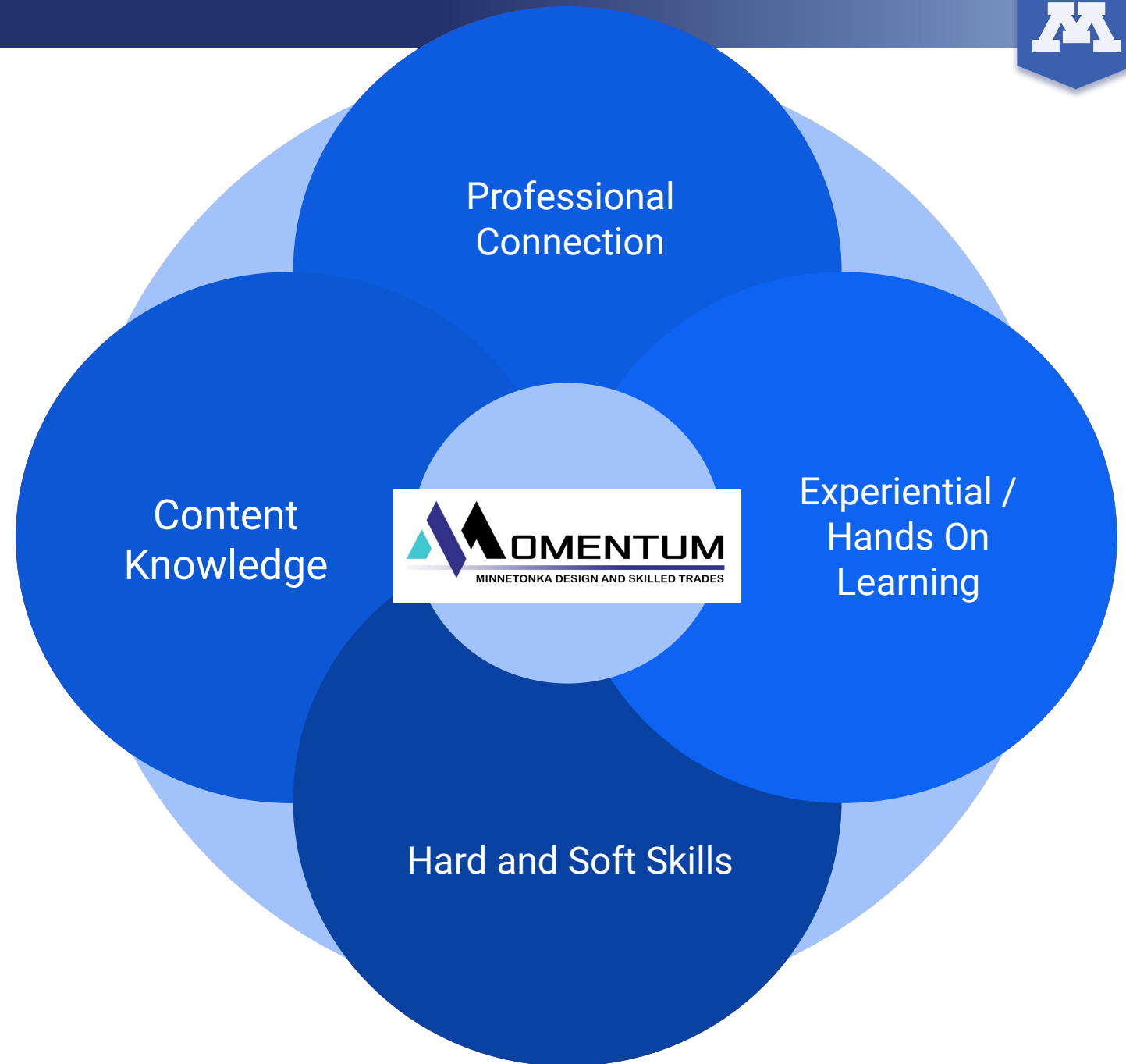
N = 106 Momentum Students

N = 62 Momentum Aviation Students





MOMENTUM IS THE BRIDGE TO:



HOW IS MOMENTUM DIFFERENT?

DRAFT



EXPERIENTIAL



HANDS-ON



**INDUSTRY
CONNECTIONS**



**ACCELERATED
PATHWAYS**



**INTERDISCIPLINARY
COURSES**



POWER SKILLS

**PROJECT BASED
LEARNING**

**ARTICULATED
CREDIT**



Based on input from community businesses:

Professionalism is a key component of MOMENTUM to provide these transferable power skills:

1. *Safety First, Actionable Mindset*
2. *Reliability*
3. *Engaged*
4. *Proactive Attitude*
5. *Effective Communicators*





Ana!

MOMENTUM MAKER BAY
PHYSICS IN HOME RENO
STUDENT / GRADUATE



RIGID
SYSTEMS INCORPORATED





MOMENTUM is an experiential exploration of the trades and beyond, empowering students to follow their curiosity and build indispensable skills.





Momentum Options to Consider

Aviation

Classes may include Flight Simulators, Drones, Private Pilot License, Ground and Instrument Ratings

Key Professional Experiences/Resources To Date Include:

- Sun Country
- Delta
- Minnesota State - Mankato
- Aloft Aviation / Executive Aviation
- MAC / FAA

Automobile

Classes Include Career Investigation, Braking Systems, Engine Performance, Power and Energy

Key Professional Experiences/Resources To Date Include:

- Luther Automotive
- Walser Automotive
- Youngstedts
- Anoka/Hennepin Technical Colleges, St. Cloud State (Articulated Credit)
- Automotive Unlimited
- UTI

Construction Systems

Mathematics in Home Renovation
Physics in Home Renovation



Key Professional Experiences/Resources To Date Include:


- RJM Construction (TCO, Audi, BMW, Bremer, Park Nicollet, Hunt Electric)
- Waytek
- GA Larson
- Fenix Group
- Bonfe Heating and Air
- Trades Union Education






Momentum Aviation Arrives!



12:23  



N96418
C182

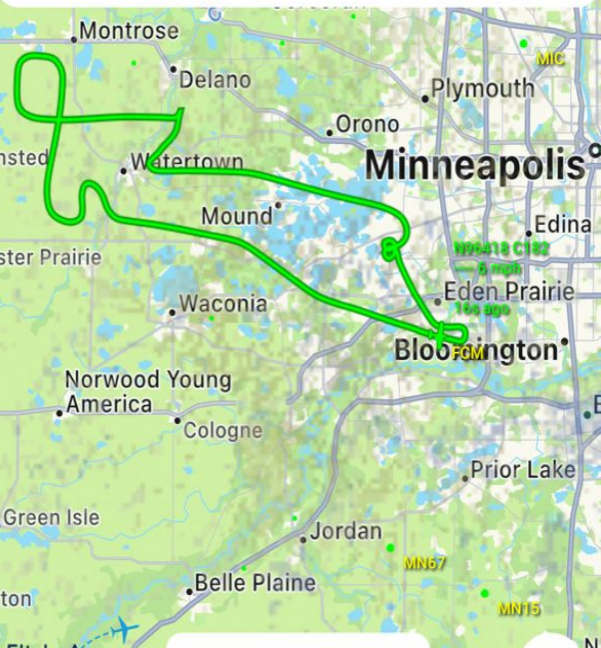
  


En Route




02/08/2023
11:43AM CST


FCM
Flying Cloud
Minneapolis, MN

[More Details](#)



FlightAware


  10x 







Intro to Aviation: Flight Simulation

This course provides a foundation in flying, aviation careers and history. Students will learn about the engineering process, problem solving, and innovations and technological developments that led to the aviation and aerospace industries of today. Students will experience hands-on problem-solving activities that serve as an fun introduction to aviation.. Students will also gain historical perspective from earliest flying machines to modern aircraft and the integral role aviation plays in today's world. This is a hands-on course and you will learn to fly on simulators as well as take flight in a real airplane.

- *Duration: One Semester*
- *Credits: .5 Elective Credits*
- *Grades: 9-12*
- *Recommended Prerequisite: None*





Intro to Aviation: UAS (Drone) Operation

This course provides a comprehensive education in drone technology, regulations and practical flight skills. Students will gain hands-on flying experience, engage in flight simulation exercises, and obtain their recreation drone pilot certificate. By the course's conclusion, they will be prepared to pass the FAA Remote Pilot test, becoming a certified commercial drone pilot. The class combines classroom instruction with practical training, offering access to drone simulation, actual drone flying and flight simulation. With no prerequisites, this course welcomes students of all levels of experience. Upon completion, students will possess the knowledge and skills to safely and legally fly drones, positioning them for careers in the expanding field of drone technology.

- *Duration: One Semester*
- *Credits: .5 Elective Credits*
- *Grades: 9-12*
- *Recommended Prerequisite: None*





Flight Instruction Through Time: Navigating Aviation and World History

Interdisciplinary course

Explore the connection of world history and aviation in "Aviation Through Time." From ancient civilizations to modern flight simulations, unravel historical threads, pilot virtual aircraft, and witness the dynamic interplay that has shaped societies and skies alike. Engage in a transformative interdisciplinary adventure.

- *Duration: Two Semesters, Two Hours*
- *Credits: 1.0 Elective Credits (Flight Instruction I), 1.0 Social Studies (World History) Credit*
- *Grades: 11-12*
- *Recommended Prerequisite: Contemporary U.S. History; AP U.S. History; American Studies 10 Honors*





Flight Training I: Private Pilot Operations

This course integrates the FAA private pilot curriculum with advanced flight simulation technology. Students will learn the fundamentals of flying airplanes through simulated flight training that closely mirrors real-world private pilot requirements. This hands-on course will cover topics such as aircraft systems, flight maneuvers, navigation and emergency procedures. By mastering the intricacies of virtual flight, students will develop the skills and knowledge necessary to excel in real-world aviation. Whether aspiring to become a pilot or seeking a deeper understanding of aviation, this course offers a dynamic and immersive experience.

- *Duration: Two Semesters, One Hour*
- *Credits: 1.0 Elective Credits*
- *Grades: 12*
- *Recommended Prerequisite: Preference given to students who have taken Aviation I or II*



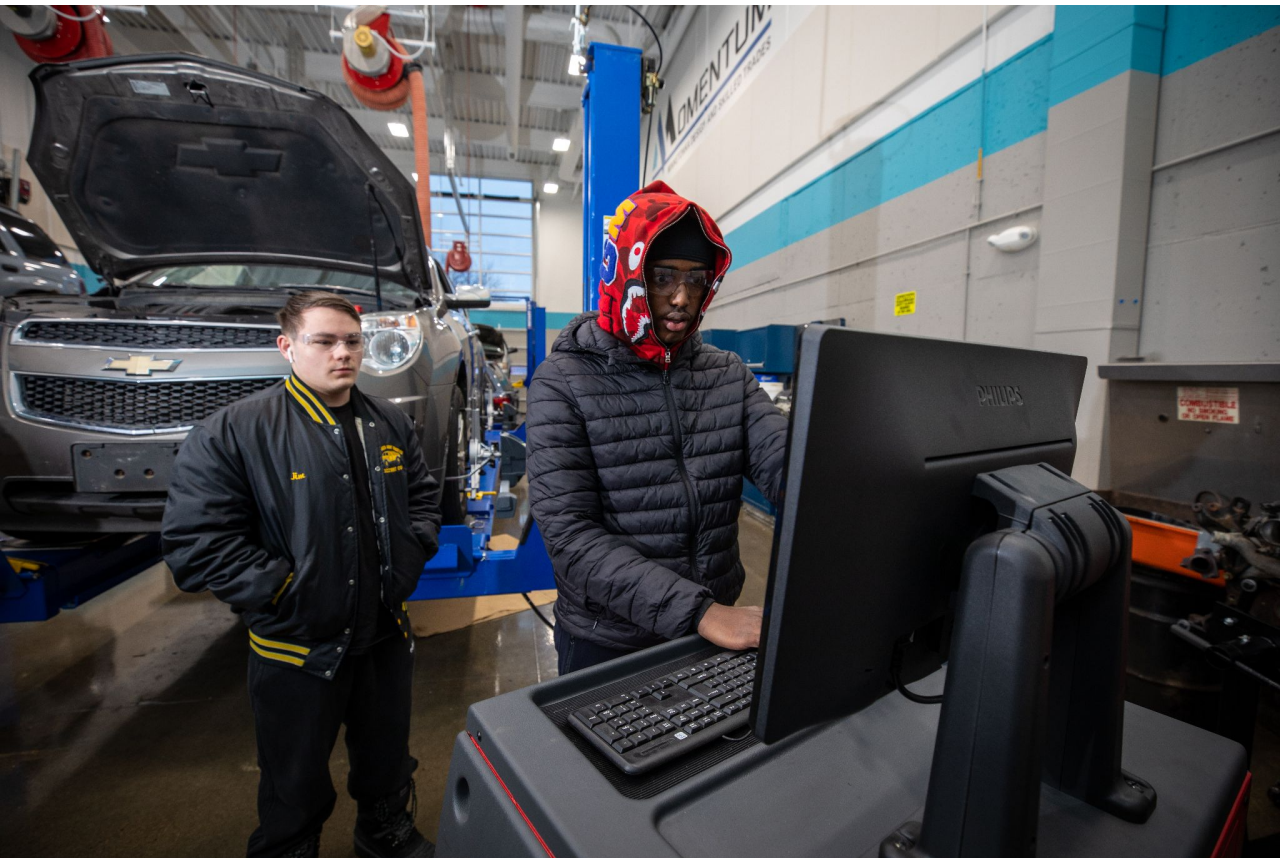


Aviation Pathway Example

Course Title	New or Current Class	Year Offered	Type	Credit	Grades	Semester or Year Long	Credits	Foundational/Intermediate/Advanced	Recommended Prerequisite	Tentative Building
Intro to Aviation: Flight Simulation	Current – renamed (previously Aviation I)	2024-2025	Momentum	Elective	9-12	Semester	0.5	Foundational	No	MHS
Intro to Aviation: UAS (Drone) Operation	Current – renamed (previously Aviation II)	2024-2025	Momentum	Elective	9-12	Semester	0.5	Foundational	No	MHS
Flight Instruction Through Time: Navigating Aviation and World History	New	2024-2025	Momentum	Elective: Flight Training I Private Pilot Operations + Core: World History Social Studies	11-12	Year long	2	Foundational	Contemporary U.S. History; AP U.S. History; American Studies 10 Honors	VanMo
Flight Training I: Private Pilot Operations	New	2024-2025	Momentum	Elective	12	Full year, one hour	1	Intermediate	Preference to students who have had Aviation I or II. Seniors only.	TBD
The Physics (or Science) of Aerodynamics: Advanced Flight Training	New - Not yet proposed; still determining Science standards	2025-2026	Momentum	Elective: Flight Training II Instrument Pilot Operations + Core: TBD Science	11-12	Year long	2	Intermediate	Flight Through Time	VanMo



Momentum Automotive Program: *Driven to Exceed Expectations*





Foundational Automotive Classes

Automotive Career Investigation

Automotive investigation will expose students to the vast array of careers related to the automotive industry. Automotive technology will be a primary focus. Students will also learn about other careers such as automobile sales, parts sales, finance, and careers outside of a repair facility or dealership.

Power and Energy I and II

ATVs, dirt bikes, go-karts, lawn mowers, and mini bikes: if you use any of these, then you should be in this course. In the power part of the course, each student completely disassembles and reassembles a small 4 stroke/cycle school engine while learning the systems that make an engine work.

- *Duration: One Semester, One Hour course*
- *Credits: .5 Elective Credits for Each course*
- *Grades: 9-12*
- *Recommended Prerequisite: None for Auto Career Investigations or P&E I, P&E II needs P&E I first.*



Foundational and Interdisciplinary: Transportation Careers and Global Commerce

This co-taught strand of two courses covers the global economic impact of transportation with a particular emphasis on the automobile. Project based learning of the transportation sector using both economic and hands on skills are shared.

- *Duration: Two Semesters, One Hour, Yearlong course*
- *Credits: .5 Elective Credits (Automotive Career Investigation), .5 Social Studies Credit (Global Studies and Economics)*
- *Grades: 11-12*
- *Recommended Prerequisite: None*









Intermediate Level Automotive Classes

Automotive Braking Systems

Automotive Steering and Suspension

Automotive Electrical Systems

Automotive Engine Systems

These courses are one of four separate intermediate level automotive courses to give students a next level experience once they have completed Automotive Investigation. The goal of these courses is to teach at a rigorous industry standard level. Rigorous training will prepare students for post-secondary education, part-time entry level employment, or to perform high level repairs on their own vehicles.

- *Duration: One Semester, One Hour course*
- *Credits: .5 Elective Credits for Each course*
- *Grades: 10-12*
- *Recommended Prerequisite: Auto Career Investigations, P&E I, Transportation Careers and Global Commerce*





Automotive Pathway Example

Course Title	Credit	Grades	Semester or Year Long	Credits	Foundational/Intermediate/Advanced	Recommended Prerequisite	Tentative Building
Automotive Career Investigations	Elective	9-12	Semester	.5	Foundational	None	MHS Auto Bay
Power and Energy I and II (Two separate courses)	Elective	9-12	Semester	.5	Foundational	P/E I: No P/E II: P/E I	MHS or Auto Bay
Transportation Careers and Global Commerce	Elective: Auto Career Investigation + Core: Global Studies & Econ, Social Studies	11-12	Year long, One Hour	1.0	Foundational	None	MHS Auto Bay
Automotive Braking Systems	Elective	10-12	Semester	.5	Intermediate	Auto Career Investigation, or Transp. Careers or P/E	MHS Auto Bay
Automotive Engine Performance	Elective	10-12	Semester	.5	Intermediate	Auto Career Investigation, or Transp. Careers or P/E	MHS Auto Bay
Automotive Electrical Systems	Elective	10-12	Semester	.5	Intermediate	Auto Career Investigation, or Transp. Careers or P/E	MHS Auto Bay
Automotive Steering and Suspension Systems	Elective	10-12	Semester	.5	Intermediate	Auto Career Investigation, or Transp. Careers or P/E	MHS Auto Bay



Momentum is BUILDING!

Construction Systems



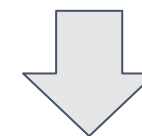




Connections to Business: Mini Youth Apprenticeship



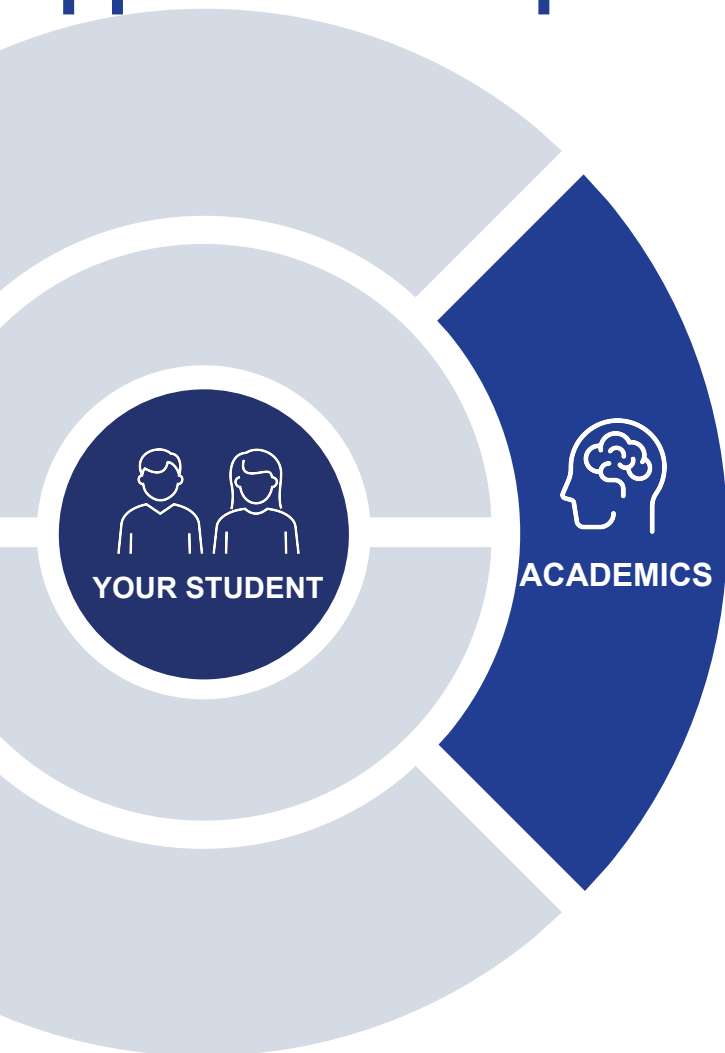
*Thanks to RJM and Hunt,
site visits of builds for:*



the
DUFFEY 2.0



Apprenticeships From the Student's Perspective



- “That no matter where you are in life if you **put your best foot forward** you can accomplish a lot
- My biggest takeaway was **how it is important to be flexible** as it can help you **adapt** to new challenges and **improve yourself and better the companies** and others
- How following your **core values** can bring great success
- The instructor gave us **lots of advice** to take with us whether or not we were going into the trades such as to **be happy**, choose a **career path you’re going to love**, and if you don’t **there’s always a way out**
- It was really cool to see all the **moving parts of a construction site**. And interesting to look at the insights of a building
- It was **fun climbing** scaffolding and seeing people welding with **sparks flying**
- Understanding the **supply and demand** and then **importance of time** on the customer
- You have to be **extra cautious** when building next to a completed structure due to that buildings **power source, water system, and heating system**”





Physics in Home Renovation

A Momentum Interdisciplinary Course

Students will be registered for a year long 2 hour course

11-12

1.0 credit of Applied Physics



Required
Coursework

1.0 credit of Home Renovation



Electives





Mathematics in Home Renovation

A Momentum Interdisciplinary Course

Students will be registered for a year long 2 hour course

11-12

1.0 credit of Applied Mathematics

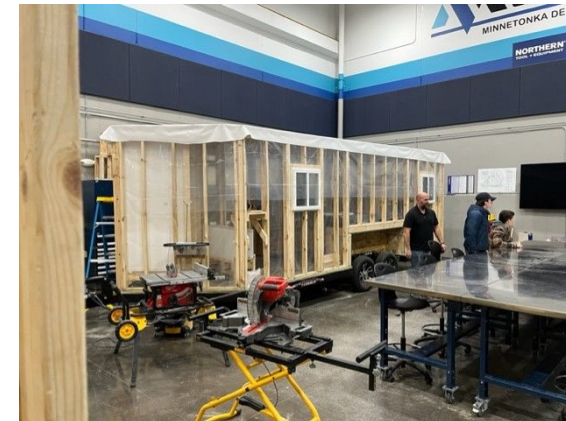


Required
Coursework

1.0 credit of Home Renovation



Electives





Momentum Interdisciplinary, Two Credit, Strand Courses

Math in Home Reno



Take this class if:

- You are going to be in **11th or 12th Grade**
- You need a core **math** & **elective** graduation credit
- You love to work with your **hands and projects**
- You want to explore **potential career options** with businesses
- You want potential **scholarship** options

Physics in Home Reno



Take this class if:

- You are going to be in **11th or 12th Grade**
- You need a core **science** & **elective** graduation credit
- You love to work with your **hands and projects**
- You want to explore **potential career options** with businesses
- You want potential **scholarship** options

Transportation Careers & Global Commerce



Take this class if:

- You are going to be in **11th or 12th Grade**
- You need a core **social studies** & **elective** graduation credit
- You love to work with your **hands and projects**
- You want to explore **potential career options** with businesses
- You want potential **articulated credit / scholarship** options

Flight Instruction Through Time: Aviation & World History



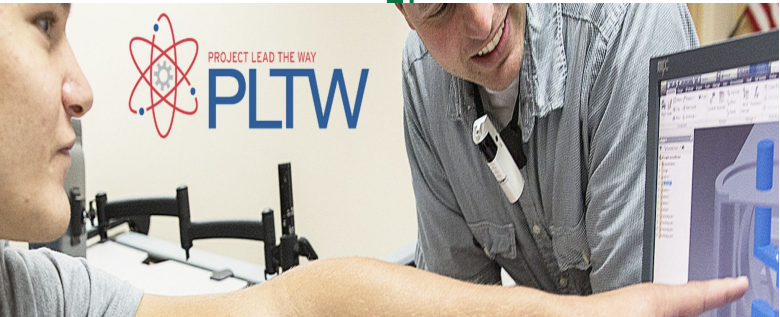
Take this class if:

- You are going to be in **11th or 12th Grade**
- You need a core **social studies** & **elective** credit
- You want to **fly an airplane** (with an instructor!)
- You want to explore **potential career / college options** with businesses, flight schools, and post secondary institutions.



Career and Technical Education Options to Consider

Architecture



PROJECT LEAD THE WAY
PLTW



- Intro to Drafting
- Architectural Drafting and Design
- Civil Engineering and Architecture
- Advanced Architecture

Engineering



PROJECT LEAD THE WAY
PLTW



- Intro to Engineering Design
- Principles of Engineering
- Civil Engineering and Architecture
- Advanced Engineering
- Advanced Engineering II

Graphic Arts and Airbrush



- Graphic Arts (Tonka Online)
- Airbrush
- Airbrush II

Metals



- Metals I
- Metals II
- Metals III
- Metal Sculpture I & II

Woodworking / Home Reno



- Home Renovation and Maintenance
- Intro to Drafting
- Woodworking
- Advanced Woodworking



PROJECT LEAD THE WAY
PLTW



PROJECT LEAD THE WAY

Pre-Engineering and Architectural Design
Pathway. Students **may earn college credit**
with end of course exam scores.



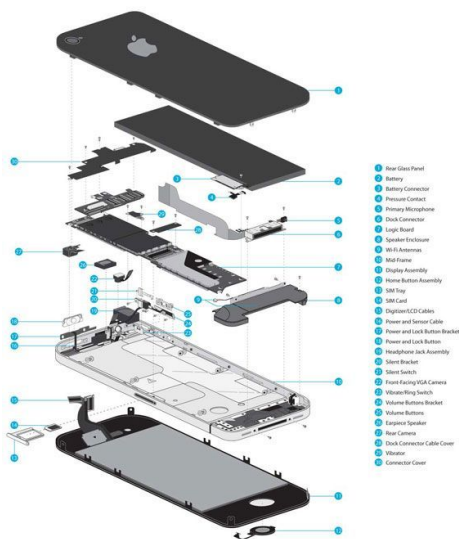
Architecture

9-12	Introduction to Drafting	.5 credit
10-12	Architectural Drafting and Design	1.0 Credit
10-12	Civil Engineering and Architecture	1.0 Credit
11-12	Advanced Architecture	.5 Credit





Engineering



9-12

Introduction to Engineering Design

1.0 Credit

10-12

Principles of Engineering

1.0 Credit

10-12

Civil Engineering and Architecture

1.0 Credit

11-12

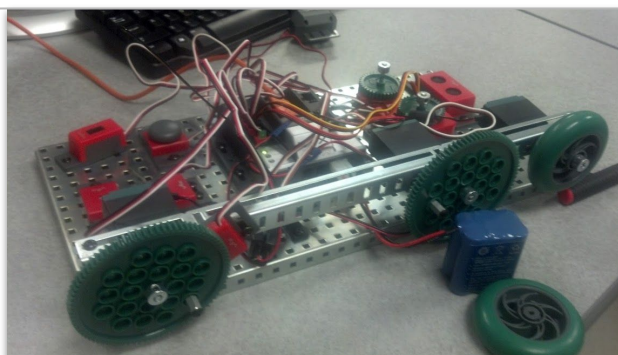
Advanced Engineering

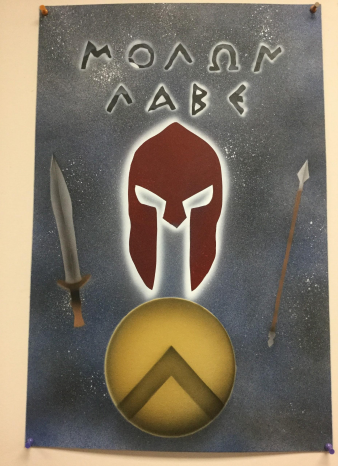
.5 Credit

11-12

Advanced Engineering 2

.5 Credit





Graphic Arts / Airbrush

**Tonka Career
and Technical
Education**



9-12	Graphic Arts (Tonka Online)	.5 Art Credit
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9-12	Airbrush	.5 Art Credit
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10-12	Airbrush 2	.5 Art Credit
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Metals

9-12

Metals 1

.5 credit

10-12

Metals 2

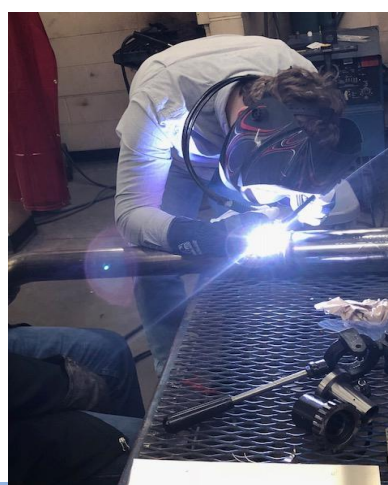
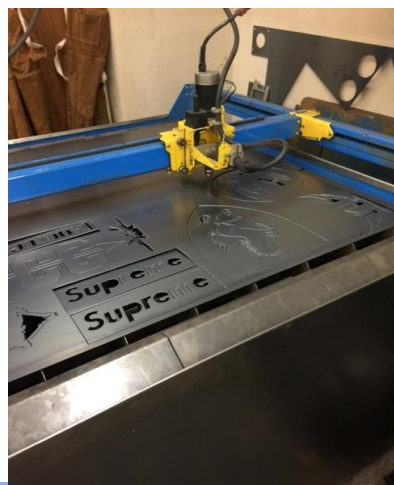
1.0 Credit

11-12

Metals 3

1.0 Credit

Tonka Career and Technical Education





Questions + Thank you!

Additional Questions?

General:

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Physics / Math In Home Renovation +
Airbrush:

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Automotive + Power and Energy:

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Metals:

david.kitzmann@minnetonkaschools.org

Department Chair / PLTW:

mitch.burfeind@minnetonkaschools.org

