

Program of Study Construction & Engineering

Students in this pathway explore problem solving skills and the foundational knowledge to analyze and take action in the development of our homes, businesses, and infrastructure (roads, etc.) This information is helpful to every student because all humans are consumers of their environment.

Students in this pathway may choose to pursue careers such as an operating engineer, mechanical engineer, construction project manager, and many more.

A program of study is a document that can be used to outline possible opportunities and experiences that students may wish to take advantage of. As students select experiences, they may wish to get a broad overview of a pathway or they may wish to deepen their approach through the pathway by including a variety of opportunities to engage in work-based learning, project-based learning, industry certifications, and early college courses that will truly prepare a student for the next steps into a career after graduation from Destinations Career Academy.

Tier 1 ***Introductory***

- Heavy Equipment Explorations
- Skilled Trades Exploration
- Engineering Explorations
- Production Printing Explorations
- Microsoft Office 1 (ECC/IRC)

Tier 2 ***Intermediate***

- Interpersonal Communication (GC/PBL)
- OSHA 10
- Blueprint Drawings

Operating Engineer

- Heavy Equipment Fundamentals^ (ECC/IRC)
- Mobile Equipment Maintenance^ (ECC/IRC)

Skilled Trades

- Safety & Tools of the Trades (FlexLab)
- Voices of the Trades

Production Printing

- Inside the Print Shop 1
- Inside the Print Shop 2

Engineering

- Applied Engineering (ES)

Tier 3 ***Capstone***

- BuildIt: Experiences Lab

Operating Engineer

- Basic Grade & Construction Math^ (EM) (ECC/IRC)
- CDL Prep

Skilled Trades

- Green Design & Technology (ES)

Production Printing

- Print & Promote

Engineering

- Engineering Drawings (ECC)

ECC – courses offering Early College Credits

IRC – courses offering Industry Recognized Certifications

PBL – Project Based Learning

^ -- courses required for Pre-Apprenticeship for Operating Engineer

EM – Equivalent Math; math or elective credit

ES – Equivalent Science; science or elective credit

ESS – Equivalent Social Studies; social studies or elective credit



Program of Study Courses

If you are interested in pursuing a college degree, career, or apprenticeship in this pathway or a related field, you should consider taking one or more of the following courses in high school.

- Geometry
- Algebra 2
- Physics
- Environmental Science
- Introduction to College Reading (ECC)
- Introduction to College Writing (ECC)
- Earth Science

Early College Credit Courses

Early College Credit is an opportunity at the high school level for students to earn high school and college credit at the same time. Sometimes these courses are offered at your high school (identified on page 1 with the notation of "ECC"). Other courses are available to students through the Early College Credit or Start College Now Programs while still in high school, for free. These may be offered only on the college or university campus or through virtual options. It is important to connect with the college/university to discuss coursework and opportunities that match your future goals. See your school counselor for applications and/or deadlines.



The following are a few options to consider (be sure to review college programs to determine the right courses for you):

- Workplace Safety
- Plan Reading & Drawing
- Written Communication
- Fundamentals of Construction



Industry Recognized Certifications

Earning an industry certification while in high school may allow you to get a job or position in an area of interest to you while still in high school. Many of these types of positions can also increase the hourly wage you may earn due to the knowledge and skills you bring to a role. Industry certifications related to this pathway include (courses where certifications are embedded are highlighted on page one with an "IRC" designation):

- Microsoft Office Specialist – Word
- Microsoft Office Specialist – PowerPoint
- Pre-Apprenticeship Certification – Operating Engineer (complete all courses designated ^)
- Multi-Craft Core Curriculum (MC3) Pre-Apprenticeship Certification
- OSHA10
- CPR/First Aid*

Experiential or Work-based Learning

Experiential or work-based learning opportunities "add depth and meaning to students' education." When paired with opportunities to experience the subject matter firsthand, classroom learning becomes more meaningful and relevant to students. Students then become more engaged and excited about their education and prospects. Experiential learning ranges from classroom guest speakers, field trips, college visits, etc. Some students may want to deepen their opportunities through work-based volunteer opportunities, service learning, internships (paid or unpaid), or participate in Youth Apprenticeship. You may earn state level and industry recognized certifications in one or more of these areas through this pathway:

- Employability Skills
- Youth Apprenticeship: Operating Engineer^
- Youth Leadership
- Youth Apprenticeship: Construction



Construction Pathway

Course Descriptions

	Credit	Grade 9	Grade 10	Grade 11	Grade 12	Notes
Skilled Trades Explorations *NEW*	0.5	X	X	X	X	
Heavy Equipment Explorations (GC)	0.5	X	X	X	X	
Engineering Explorations (GC)	0.5	X	X	X	X	
Production Printing Explorations *NEW*	0.25	X	X	X	X	Short Course
Microsoft Office 1 (GC/IRC/ECC)	0.5 - 1.0	X	X	X	X	
Interpersonal Communication (English Credit) (GC)	0.5			X	X	
^Heavy Equipment Fundamentals (ECC/IRC)	0.5		X	X	X	
Safety & Tools of the Trades (FlexLab) *NEW*	0.5		X	X	X	
Voices of the Trades *NEW*	0.25		X	X	X	Short Course
Applied Engineering 1/2 (ES)	1.0		X	X	X	Yearlong
^Mobile Equipment Maintenance (ECC/IRC)	0.5			X	X	
Inside the Print Shop 1 *NEW*	0.25		X	X	X	Short Course
Inside the Print Shop 2 *NEW*	0.25		X	X	X	Short Course
CDL Prep	0.25				X	Qtr 2 Qtr 3
Green Design & Technology (ES)	0.5		X	X	X	
^Basic Grade & Construction Math (EM) (ECC/IRC)	0.5			X	X	
Print & Promote *NEW*	0.25			X	X	Short Course
Engineering Drawings (ECC)	0.67			X	X	
BuildIt: Experiences Lab	0.25-0.5			X	X	Teacher Rec.

^ – courses required for Pre-Apprenticeship for Operating Engineer

	Credit	Grade 9	Grade 10	Grade 11	Grade 12	Notes
OSHA 10	0.25	X	X	X	X	Short Course
Blueprint Drawings	0.25	X	X	X	X	Short Course
First Aid/CPR/AED	0.25		X	X	X	Short Course



ECC – courses offering Early College Credits



IRC – courses offering Industry Recognized Certifications



PBL – Project-Based Learning

EM - Equivalent Math

ES - Equivalent Science

Hear from our pathway teachers about the Construction & Engineering Pathway: [See video here](#)

HEAVY EQUIPMENT EXPLORATIONS

Course Length: Semester Course

Credit: 0.5 credit

Grades: 9-12

Prerequisite(s): None

Course Description: This semester-long course focuses on heavy equipment, emphasizing operation, functions, and real-world application in job site settings. Students learn how equipment is used and the responsibilities of working in and around heavy equipment operations. The course also introduces related skilled trades, including carpentry, plumbing, ironwork, and electrical work, and how these roles support on construction sites. Students build foundational skills in safety, maintenance, applied mathematics, and workplace communication to prepare for entry-level opportunities as an operating engineer.

SKILLED TRADES EXPLORATIONS *NEW*

Course Length: Semester Course

Credit: 0.5 credit

Grades: 9-12

Prerequisite(s): None

Course Description: This semester-long course introduces students to the skilled trades through exploration of the construction industry, including how it operates and the roles of various trades and professions. Students engage in hands-on, skill-based activities while learning essential safety practices, applied math, communication, and blueprint reading. The course examines workforce demographics, wage and benefit potential, and the professional behaviors that contribute to success in construction careers. Students document their learning in a Career Exploration Portfolio and complete a student-choice, hands-on capstone project to make an informed decision about pursuing a career in the construction industry.

ENGINEERING EXPLORATIONS

Course Length: Semester Course

Credit: 0.5 credit

Grades: 9-12

Prerequisite(s): None

Course Description: This course introduces the concept of engineering to students. Starting with the history of engineering, students will learn how engineering has evolved and understand that the past plays a critical role in product improvement. Students will also be introduced to the Engineering Design Process to understand how it plays a vital role in the world of engineering. Lastly, students will investigate different focus areas of engineering to decide which subdiscipline could be of future interest to them.

MICROSOFT OFFICE 1



Course Length: Semester Course

Credit: 0.5-1.0 credit

Grades: 9-12

Prerequisite(s): None

Course Description: Learn essential skills in Microsoft Word, PowerPoint, Outlook, and Excel through hands-on projects and practical applications. They learn to create professional documents, design engaging presentations, manage email and schedules effectively, while using Excel to organize data, perform calculations, and build visual charts. The Microsoft 365 applications learned in this class are valuable and widely used across all career pathways, providing a strong foundation for academic and career success. **Students must have the full suite of Microsoft 365 or its equivalent available for this course.**

Note: Students prepare for and take the Microsoft Office Specialist (MOS) certification exam. This industry-recognized credential demonstrates technical proficiency and strengthens college and career readiness. Dual Credit can be earned after taking both Microsoft Office 1 & 2.

Platform(s): Students in this course will be expected to access multiple “outside” platforms including GMetrix or TestOut Software, Certiport (for certification), to name a few.

INTERPERSONAL COMMUNICATION

Course Length: Semester Course

Credit: 0.5 credit *English Credit*

Grades: 10-12

Prerequisite(s): None

Course Description: In this course, students will pursue a greater understanding and appreciation for cultures of various races, ethnicities, socio-economic classes, and genders by analyzing modern and classic literature. Students will practice using textual references, inferring, and critical thinking. This course continues to focus on applying the three enduring outcomes of: strengthening the ability to read with intent, write with purpose, and speak with clarity.

^HEAVY EQUIPMENT FUNDAMENTALS



Course Length: Semester Course

Credit: 0.5 credit

Grades: 10-12

Prerequisite(s): Heavy Equipment Explorations (or Construction Explorations if taken before the 2026-2027 school year)

Course Description: Introduces students to heavy equipment used in the construction industry, students will also be instructed on basic safety, maintenance, and communication methods that operating engineers may be exposed to.

Notes: Completion of this course, along with Basic Grade & Construction Math and Basic Equipment Maintenance, at a C or better makes the student eligible for a Pre-Apprenticeship Certification endorsed by Local 139—International Union of Operating Engineers. / Completion of this course at a B or better can earn apprenticeship credit at Fox Valley Technical College.

SAFETY & TOOLS OF THE TRADES (FLEXLAB) *NEW*

Course Length: Semester Course

Credit: 0.5 credit

Grades: 10-12

Prerequisite(s): Skilled Trades Explorations is *RECOMMENDED*

Course Description: This course prepares students for entry into the construction trades by introducing common tools and materials used on construction sites and emphasizing proper handling and safety procedures. Students develop skills in safe tool operation, jobsite awareness, and industry-standard practices, including flagging. Instruction prepares students to take and pass the OSHA 30 certification exam while reinforcing responsibility, communication, and workplace professionalism. Through applied activities and assessments, students build foundational safety knowledge essential for construction careers.

FlexLab Component: This course is offered asynchronously. No live instructional classes will be provided. The teacher will be available for support, as needed. FlexLab courses contain two required components - failure to complete both will result in failure of the course:

Online Coursework: Students will complete coursework independently online with milestones and deadlines built within the course. Course content will include digital lessons, video instruction and lectures, readings, and interactive assignments delivered through our learning management system and CareerSafe Program.

Virtual Lab Sessions: Students will participate in ONE of three lab sessions. Each session will last up to three (3) hours. Labs may include simulations, real-world issues, and/or group problem solving. Students will submit lab reports or reflective journals after each lab session.

APPLIED ENGINEERING 1/2 (ES)

Course Length: Yearlong

Credit: 1.0 credit

Grades: 10-12

Prerequisite(s): Engineering Explorations or by teacher recommendation

Course Description: Discover how technology has changed the world around us by perusing technological solutions to everyday problems. While using the Scientific Method and the Engineering Design Process, learn how electricity, electronic systems, magnets, and circuits work. Understand the design process and bring your ideas to life. Explore various inventions and solutions that have solved problems across industries. Students will also use the Engineering Design Process and an Engineering Notebook to reverse engineer a product of their choice.

^MOBILE EQUIPMENT MAINTENANCE



Course Length: Semester Course

Credit: 0.5 credit

Grades: 10-12

Prerequisite(s): Heavy Equipment Explorations (or Construction Explorations if taken before the 2026-2027 school year)

Course Description: Instruct students in the basics of maintenance of heavy equipment. Students will learn about engines, hydraulic systems, powertrain systems, lubricants, and electrical systems. They will also be taught preventative maintenance, how to use parts and technical manuals, shop safety, and tools. Engin

Notes: Completion of this course, along with Basic Equipment Fundamentals and Basic Grade & Construction Math, at a C or better makes the student eligible for a Pre-Apprenticeship Certification endorsed by Local 139—International Union of Operating Engineers. / Completion of this course at a B or better can earn apprenticeship credit at Fox Valley Technical College.

CDL PREP

Course Length: Quarter Course

Credit: 0.25 credit

Grades: 12

Prerequisite(s): None

Course Description: Instructs students in the basics of heavy equipment operation licensure requirements, followed by professional skill building and employment readiness.

Note: This course does not provide behind-the-wheel instruction nor completion of the Commercial Drivers License exam. The exam must be scheduled to be taken at a local DMV.

GREEN DESIGN & TECHNOLOGY (ES)

Course Length: Semester Course

Credit: 0.5 credit

Grades: 10-12

Prerequisite(s): Engineering Explorations

Course Description: This course examines the impact of human activities on sustainability while exploring the principles and technologies that support sustainable and high-performance building design. Students learn how green building jobs and practices can impact climate change and study green energy, green agriculture, and green transportation systems, including emerging technologies such as water, wind, and solar power. Instruction highlights the key systems and stakeholders involved in high-performance buildings and the wide range of jobs and skills needed across green industries. Students also explore how businesses are adapting to increased demand for sustainable products and services and consider potential career pathways in green building and related green sectors.

^BASIC GRADE & CONSTRUCTION MATH (EM)



Course Length: Semester Course

Credit: 0.5 credit

Grades: 11-12

Prerequisite(s): Successful completion of Geometry and/or Integrated Math II

Course Description: This course helps students apply mathematical concepts and calculations using plansheets to better understand the construction process. Students trace the history of mathematics and examine systems of measurement used in construction. Instruction includes performing mathematical operations with whole numbers, common fractions, and decimal fractions. Emphasis is placed on accurate calculations and real-world application within construction contexts.

Notes: Completion of this course, along with Basic Equipment Fundamentals and Mobile Equipment Maintenance, at a C or better makes the student eligible for a Pre-Apprenticeship Certification endorsed by Local 139—International Union of Operating Engineers. / Completion of this course at a B or better can earn apprenticeship credit at Fox Valley Technical College.

ENGINEERING DRAWINGS (DUAL CREDIT COURSE)

Course Length: Semester Course

Credit: 0.67 credit

Grades: 11-12

Prerequisite(s): Engineering Explorations is *RECOMMENDED*

Course Description: Focuses on the basic principles of engineering drawings and manufacturing processes. Through interpretation and sketching, students learn to visualize the part, section or assembly views. Students study isometric and orthographic views on a drawing. The student will also use drawings pertinent to the trades with examples in welding, facilities, piping, sheet metal, equipment manuals, electrical symbols, and fluid power symbols.

Note: Dual Credit can be earned for Engineering Drawings from Madison College.

Short Courses

What is a short course?

Short courses are no-risk, 6 to 9 week asynchronous courses where students can delve into a new topic, prep for an upcoming certification or state test, or try out their hand at a simulation. These courses are pass/fail (but only passing grades will land on a student's transcript). Because they are pass/fail, they will not impact a student's GPA. Each course can only be taken once. Teachers are available for questions, but will not hold regular class times. Check out these course offerings:

OSHA 10

Course Length: Quarter Course

Credit: 0.25 credit

Grades: 9-12

Prerequisite(s): None

Course Description: This course offers students the opportunity to become OSHA 10 certified, which is an excellent addition to any resume! Upon completion of the CareerSafe program, you will have a better understanding of the safety needs while working in a career within the construction industry. This program is designed to prepare you for the safety measures and needs within any jobsite. It will also prepare you for how to handle situations where safety is a concern.

BLUEPRINT DRAWINGS

Course Length: Quarter Course

Credit: 0.25 credit

Grades: 9-12

Prerequisite(s): None

Course Description: This course introduces students to mechanical and architectural drawings with an emphasis on blueprint reading and interpretation. Students learn to define blueprints, plans, and specifications; understand how they are prepared; and identify the purpose, importance, and proper handling of a complete set of plans. Instruction includes identifying cover pages, title blocks, views, details, symbols, abbreviations, lines, scale, and the use of a fractional rule to calculate measurements. This course also requires a hands-on portion in which students create their own architectural blueprints for a “dream cabin,” applying proper drawing conventions and handling procedures. **Required materials for this activity will be sent to students, and failure to complete the hands-on portion will result in not receiving the 0.25 credit.**

FIRST AID/CPR/AED



Course Length: Quarter Course

Credit: 0.25 credit

Grades: 9-12

Prerequisite(s): None

Course Description: Be prepared, not scared to provide care at home, work, or in your community by learning the appropriate care to provide first aid, breathing, and cardiac emergencies. Within this course you will learn basic first aid knowledge in treating different types of injuries, heatstroke, choking, allergic reactions, asthma, and more. You will learn how to respond to and care for people who may be going through a medical crisis. By becoming familiar with Adult First Aid/CPR/AED, you will learn skills to offer quick treatments, prevent victim's conditions from becoming worse, and help preserve life.

***Note:** This course requires you to demonstrate skill proficiency to a certified instructor *in-person* to meet the requirement for certification. 50% of the course is self-paced online and 50% is in-person skills that include discussion, practical application, and skills testing. Before students can attend the in-person course, the online course must be completed. Potential locations for the in-person skills session include Green Bay, Madison, Milwaukee, La Crosse, and/or Eau Claire. Dates and locations to be determined.

VOICES OF THE TRADES *NEW*

Course Length: Semester Course

Credit: 0.25 credit

Grades: 10-12

Prerequisite(s): Skilled Trades Explorations is *RECOMMENDED*

Course Description: This course examines the importance of diversity, equity, and inclusion within the construction industry and its impact on the workforce and worksites. Students explore the historical and social roots of underrepresentation of women and minorities, identify barriers to building a diverse and equitable construction workforce, and examine the role of cultural competence in individuals and organizations. Instruction addresses equal employment opportunity and non-discrimination rights while analyzing why gender matters in construction, including how health and safety issues are affected by gender-specific concerns. Students learn strategies to protect themselves and their co-workers and to promote equitable health and safety practices and policies in the workplace.

PRODUCTION PRINTING EXPLORATIONS *NEW***Course Length:** Quarter Course**Credit:** 0.25 credit**Grades:** 9-12**Prerequisite(s):** None

Course Description: This quarter-long short asynchronous course introduces students to the world of production printing, covering key processes, technologies, and careers. The course emphasizes career exploration, hands-on learning through authentic print-related activities, and a student-choice design project. Students will build foundational knowledge of printing methods, paper and ink considerations, color theory, and industry workflows while exploring real-world applications and career opportunities in the printing industry.

Inside the Print Shop 1 *NEW***Course Length:** Quarter Course**Credit:** 0.25 credit**Grades:** 9-12**Prerequisite(s):** Production Printing Explorations

Course Description: This asynchronous course introduces students to the many ways printed products are created and used in the real world. Students explore different types of printing, including commercial printing, books and publications, packaging, signs, direct mail, and secure documents. The course explains how print shops are organized, how jobs move from design to finished product, and why accuracy and security matter. Students also learn how printed items are finished, delivered, and installed. The course highlights how printing adapts to new materials, technology, and everyday challenges.

Inside the Print Shop 2 *NEW***Course Length:** Quarter Course**Credit:** 0.25 credit**Grades:** 9-12**Prerequisite(s):** Production Printing Explorations & Inside the Print Shop 1

Course Description: This asynchronous course introduces students to how printed projects are prepared, produced, and finished from start to finish. Students learn about common finishing techniques such as folding, cutting, binding, embellishing, and packaging, as well as specialized processes for mail and signage. The course explores how files are prepared for print, including design considerations, page setup, proofing, and quality checks to ensure accurate results. Students are also introduced to the role of software, data, and automation in modern print production workflows. Emphasis is placed on understanding how people, equipment, and processes work together to produce high-quality printed materials efficiently.

Print & Promote *NEW***Course Length:** Quarter Course**Credit:** 0.25 credit**Grades:** 9-12**Prerequisite(s):** Production Printing Explorations, Inside the Print Shop 1 & Inside the Print Shop 2

Course Description: This asynchronous course introduces students to how printed materials are used across many real-world settings, including education, healthcare, government, manufacturing, non-profits, finance, and signage. Students explore the different needs, trends, and expectations of each area and how print products are designed to meet those needs. The course also examines how print services are offered through in-plant shops, sign shops, direct mail, and online ordering systems. Using what they have learned throughout the production printing courses, students complete a hands-on project by designing a printed product for a specific audience or use. Emphasis is placed on thoughtful design, real-world application, and matching print solutions to purpose.