16 Great Reasons You Should Take Career Elective Courses at VBHS!

(in Biomedical, Computer Science, Engineering, Automation Technology, Business, Agri Science, & more!)

1. You owe it to yourself to find out what you'll like to do (& what you won't like) WHILE IT'S FREE! While it's pretty cool and cost effective to earn college credit for taking concurrent and AP courses, you also have to ask yourself this, **"How is taking one more math, science, or history class going to help me figure out what I want to do for the rest of my life?"** All it would take is switching your major one time in college to lose the cost advantage of taking all those concurrent and AP courses…and many times there's a considerable amount of pressure to not change your major and end up staying with something you're not that excited about…which is NOT a good situation to be in either. But **the good news is, there is enough room in your schedule to take AP courses AND career elective courses**…so it's wise to have a good balance of both. And why **we encourage students to try at least one of these pathways** (maybe 2 or 3) while it's "free" to change your mind. ☺

2. Career elective courses… and finding out what you like to do… gives you **more motivation for doing well in school**, **because now you know your "why" for going to school**.

3. In these classes, **you discover you can do just about anything you get excited about and are willing to put some effort into doing.** A lot of times we might get intimidated by things with names like "engineering" or "computer science", but you shouldn't be. You can do this! For example, past years have shown that **if you got an A or a B in Algebra, you will most likely do better or get the same grade in engineering**. The main thing you need to answer is "will you like it?" and will you be missing out on something you'll enjoy doing for the next 50 years if you don't try it. You owe it to yourself and your future to find out. If you like math, you will probably like engineering and computer science. And we start with very basic stuff…that's easy to learn and then build on that until all of a sudden, you look back and realize you've become more skilled than you thought you could. And if you like it, you'll want to learn even more and before you know it, you're an expert and can land a great job doing something you like to do. That's what these career classes are all about…and they're more fun than the classes you've been used to because you're actually applying what you're learning, instead of just learning to learn.

4. Some great news we got this year was that **all of our 3rd year PLTW courses are now weighted credit**, which means they count just like an AP class toward your GPA. In the past, students were penalized for taking PLTW classes instead of AP classes, but **now you can simply choose the classes you like and want to take** instead of just what's good for your GPA. Very excited about this for our students!

5. Also, the 2nd Year Engineering and Biomedical classes (as well as any Computer Science class) count as your 3rd year science credit…which means you don't have to take Chemistry. You might still want to take Chemistry (if you intend to go into pharmacy or be a chemical engineer), but you have that option…**which creates room in your schedule to take more career classes in your chosen pathway, or try out classes from other pathways**. This is what high school is all about, keep trying different things!

6. If you do find out that one of these STEM or business classes is right up your alley, **you get a head start in college or your career**. I just had a student send an email who was sharing how he was using dimensioning skills he learned from our 1st-year engineering class (in the 9th grade)…on his drawings in his senior design course in college. I've had several students say they are helping tutor kids in college who didn't get to take classes like these and said they were much more confident in their introductory freshman college courses than they would have been.

7. You not only get a head start in college (if you choose to continue your education), but you also actually **graduate from high school with skills you can use to get a decent job** and start a career. If you go to college, these skills can help you get a summer job or internship with applicable experience to your chosen career. And if you change your major, the skills you learn apply to many different technical fields. Many times we hear that we don't even know the types of jobs we're preparing our students for…but we can be confident that many of the skills students learn in our career classes will translate into the jobs of the future. Technical skills such as data collection, problem solving, programing, lab measurements, electrophoresis, & DNA microarray to name a few.

8. Also learn valuable professional skills that you need to succeed in today's world…including how to present information, create slides, work in teams, conflict resolution, analyze lab results, research, critical observation, interpret graphs, communication skills, critical reading / writing / good notetaking (how to decipher or elicit important information from general text), writing lab reports/notebooks/justify answers/project documentation, etc.

9. After you learn these skills, you can **get certifications so your resumé looks REALLY good** on both college scholarship applications and as well as job applications. In career classes, students get certified in Autodesk Fusion 360 (CAD), Microsoft Excel, Word, PowerPoint, ServSafe Manager (FACS), NRF-Customer Service & Sales*

10. Our career elective classes encourage critical thinking and creativity as **students work together** in teams to **solve real-world problems**. Our classrooms are full of students **moving around**, discussing with group members, and taking a **hands-on approach in** their **learning**. **Many students perform better (and are more motivated) in a hands-on environment**…where they are applying the concepts they are learning vs. instead of just taking notes or memorizing things out of a book. In career classes, students are only learning what they need to know to acquire a skill versus learning everything whether you're going to use it or not…learning concepts "just in time" instead of "just in case". This is a BIG difference and **helps students get more excited about school in general**.

11. Students get to play with all kinds of technology (i.e. cool stuff)…using state-of-the-art lab and VEX equipment, brand new electronic wiring and PLC equipment, 3-D printers, and ABB 6-axis robotic arms as well as industry-standard software in our computer labs **to gain skills that are real world**.

12. You get to be part of "the club" (engineering, biomed, comp science, agri science, etc.) for 3+ years… where you really get to know other students who take the same classes, work on the same projects, like what you like, etc.

13. When you get to be a senior, **you can take a "capstone" course** where you solve a problem of your own choosing, build & test a prototype, and present to a panel of professionals (engineers, doctors, nurses, programmers). **This is a <u>GREAT</u> experience** for our students to learn the soft skills needed to be successful when they graduate.

14. Students who take 3 years of career classes in one or multiple pathways **get a "Completer" cord** to wear at graduation and get to **be a part of our completer ceremony**…where they receive labcoats, commemorative t-shirts, 3-D printed mementos, etc. as a fun and meaningful way to recognize their achievement.

15. You get to be a part of CTSO's like TSA (Technology Student Association), FFA, FBLA & Robotics!

Our TSA chapter takes the study of STEM (science, technology, engineering, and mathematics) beyond the classroom and **gives you the chance to compete in all kinds of categories** (such as **music production, video game design, photography, CAD, agriculture and biotechnology, website design, dragster design, audio podcasting, film technology, fashion design, drone video production, robotics, or board game design**…among many more to choose from). The variety of these competitions appeal to many different types of students… and motivates them to learn and apply technology (which they love to use) to something they already enjoy (like music, video games, and photography) as well as skills they are learning about at school in our STEM classes. In short, these are the best extracurricular "learning application" activities in areas you are already interested in, particularly for students in our STEM programs…providing an outlet both to learn (in a fun way), compete, and be recognized for your skills. We've had many students place at state competition and qualify for national competitions in Atlanta, Wash DC, & Orlando…where **our problem solving team won 2nd place in the whole country**! I've never seen 2 kids more excited to be on stage. We also got to tour the Coca-Cola factory and go to a Braves baseball game! It was a lot of fun & a neat experience…and **this year, it's Nashville here we come!**

16. One of the biggest reasons to get started taking career courses is that VBHS is always adding even more cool stuff for students to be able to do every year. For example, we just bought $120,000 of new electronic hardware that control motors, lights, and other fun applications (to go with our robots) in our Automation Technology pathway. **I always hear comments from students that sound like this,**
"I wish I would've known how cool all this stuff was so I could have started sooner and taken more of it!" The more classes you take, the cooler it gets…but you can't wait and then try to take everything all at once, so

the best thing is to get started as soon as you can…so you don't miss out on any of it!

If you'd like to know more about our career programs, feel free to contact Dr. Joe McLean at joe.mclean@vbsd.us or (479) 310-0714.

Biomedical Science Teachers

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Biomedical Career Pathway offered at Van Buren High School

Project Lead the Way (PLTW) Biomedical Science prepares students for future medical careers by investigating real-world issues and exploring topics like disease, forensic science, DNA analysis, prosthetic design, public health, and more. Along the way, students gain experience with state-of-the-art tools and techniques that are used by professionals in hospitals and labs every day. PLTW Biomedical Science empowers students to build knowledge and skills in biomedical science, as well as in-demand, transportable skills like problem solving, critical and creative thinking, communication, and collaboration.

Principles of Biomedical Science-Year 1

Students explore the vast range of careers in biomedical sciences through experimental design and data analysis, crime scene investigation using skills vital in medical testing and other activities.

Labs/Skills

-Analyze blood using DNA fingerprinting
-Analyze crime scene evidence and autopsy results to determine manner and cause of death
-Heart Dissection
-Take patient's vitals, diagnose patients, run medical tests, and determine treatments

Human Body Systems-Year 2
(Counts as a third year science credit)

Students experience real-world scenarios and cases to see medicine in action – as they diagnose and provide treatment and rehabilitation to patients at an outpatient center, keep clients safe and healthy on adventure trips in remote locations, and work in a research center to design laboratory investigations to explore development and aging.

Labs/Skills

-Construct body structures with clay on Manikens
-Use experimental design to test factors affecting grip strength
-Dissect brain, eyes, kidney, lungs, bone
-Diagnose and build treatment plans for patients

Completers

A completer of the Biomedical Science courses is an individual that passes three biomedical courses in consecutive order with a C or higher. Biomedical Science completers will receive the following:

- A CTE completer cord at graduation
- A Biomedical completer cord at graduation
- A completer seal on the student's diploma
- Recognition at the Biomedical Science Completer Graduation Ceremony
- Opportunity to get a personal lab coat

Students that complete all 4 courses will receive all of the above, plus:

- A PLTW biomedical medal to wear at graduation

Biomedical Science Teachers

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Medical Interventions-Year 3 (Weighted credit)

Students delve deeper into medical activities like designing a prosthetic arm as they follow the life of a fictitious family and investigate how to prevent, diagnose, and treat disease.

Labs/Skills

-ELISA Lab
-Bacterial Resistance Lab
-Use PCR, gel electrophoresis to analyze DNA from own cheek cells to determine a person's ability to taste PTC paper
-Construct a prosthetic arm
-Construct and participate in a laparoscopic surgery simulation
-**CPR Certification**

Biomedical Innovation -Year 4

Students build on the knowledge and skills gained from previous courses to design their own innovative solutions for the most pressing health challenges of the 21st century.

Labs/Skills

-Triage patients
-Develop, perform and analyze, with statistics, a self-constructed experiment
-Develop a new medical device, make a prototype and create a marketing pitch
-Determine dosage levels and how that affects medicine and the environment
-Perform an autopsy on a pig and use suturing techniques
-Develop a patient case study over a medical concern

Medical Careers

The biomed program would be beneficial for a number of medical careers including, but not limited to:

- **Neurologist**
- **Endocrinology**
- **Forensic Scientist**
- **EMT**
- **Medical Examiner**
- **Nurse**
- **Food Scientist**
- **Nutritionist**
- **Primary care physician**
- **Phlebotomist**
- **Clinical Researcher**
- **Medical Laboratory Technician**
- **Phychologists**
- **Hematologist**
- **DNA Analyst**
- **Dieticians**
- **Genetic counselor**
- **Physical Therapist**
- **Sports phychologist**
- **Occupational therapist**
- **Cardiologist**
- **Crime Scene Investigator**
- **Toxicologist**
- **Biochemist**
- **Clinical Geneticist**
- **Molecular Biologist**
- **Microbiologist**

Information About Pre-Engineering Pathway

Jason Couch & Dr. Joe McLean

Look at ALL these different fields you can choose to solve problems in!

- Aerospace
- Agricultural
- Biomedical
- Chemical
- Civil
- Computer Hardware
- Electrical
- Electronics
- Environmental
- Health and Safety
- Industrial
- Marine and Ocean
- Materials
- Mechanical
- Mining and Geological
- Nuclear
- Petroleum

Click on link below
for even more to choose from!
100+ Types of Engineers

Contact Info: school: (479) 310-0714
email: joe.mclean@vbsd.us or jason.couch@vbsd.us

Prerequisite: The course requires no official prerequisites, but students should be decent at math (an A or B in Algebra or 8th grade math is a good sign for success)

What will you do in this class? Students will create objects and assemble them on the computer (with a CAD software program called Inventor) as well as build physical prototypes (like puzzle cubes, model cars, and model trains). They will also be given certain types of materials (paper clips, balloons, rubber bands, corks, etc.), divided up into teams, and asked to design a fling machine, paper bridges, cable car, or other similar contraptions that will launch an object across the room. So there are plenty of hands-on activities that kids enjoy doing. **If you'd like to see LOTS of pictures and video clips of what our students do in these classes, go to YouTube, search for "VBHS Engineering"...and click on "VBHS Engineering Recruiting Presentation" for a shorter overview or "More in-depth video about Engineering Program at VBHS", or just search for my YouTube channel "soooieee".**

I know the thought of engineering might be a little scary for some, but **if your child makes A's or B's in their math classes** OR are willing to put in some effort to learn, **they shouldn't be afraid of this class at all...and past years have shown 95% of students make the same grade in Engineering (or better)**. This is an introductory course that develops design skills that apply to other fields as well (like graphic design, interior design, computer-aided drafting (CAD), architecture, etc.), so it's not just for future engineers. This class is also beneficial from the standpoint of showing students the importance of doing well and learning basic skills in their other classes like math, science, and English. While this is not a "blow-off" class, it's still a 9th-grade level class that's not just intended for the "best of the best". Those who do well and enjoy it can continue on with the even more cool and fun activities and projects in the program...but they can't if they never sign up and give it a shot. ☺

All that to say...if your child likes math or science and has even a remote interest in engineering or any technical field (where learning problem solving skills would definitely help them), **then I would highly encourage them to try this class.** Other good things to know: **the 2nd year class now counts as the 3rd year science credit** (which means they can take another elective instead of Chemistry) **AND the 3rd year class is now weighted credit (which means it counts like an AP class toward their GPA).** This is really good news that further encourages students to stay in this pathway (since they won't be penalized for taking engineering instead of an AP class). There is more info about all the engineering classes we offer on the back of this page. Questions? Feel free to contact me.

Sincerely, (using contact info above)
Dr. Joe McLean

Pathway To Engineering | High School Engineering Program

The PLTW Pathway To Engineering (PTE) program is a sequence of courses, which follows a proven hands-on, real-world problem-solving approach to learning. Throughout PTE, students learn to work in teams and develop organizational, critical-thinking, and problem-solving skills. **Students use the same industry-leading 3-D design software used by companies like Intel, Lockheed Martin and Pixar**. They explore aerodynamics, astronautics and space life sciences. **Hello, NASA… in fact, one of our former students just started working there!** Students apply engineering concepts related to biomechanics – think robotics. It's STEM education and it's at the heart of today's high-tech, high-skill global economy.

- **Introduction to Engineering Design (IED)**
  - Designed for 9th or 10th grade students, the major focus of IED is the design process (a method of problem solving) and its application using CAD. Hands-on projects include:
    - Instant Challenges – design cable cars, paper bridges, and fling machines
    - Sketching – use step-by-step methods to develop isometric, oblique, and perspective sketches and multi-view drawings
    - Puzzle Cube – design, construct, and test a physical puzzle cube as well as a digital version on the computer using Inventor (a CAD software program)
    - Automoblox – reverse engineer improvements on CAD to a toy Automoblox car
    - Miniature Train – create a train on CAD and animate it to move down the track
    - 3-D Printer – create any design you want on CAD and print it on our 3-D printer

- **Principles of Engineering (POE)… this course counts as 3rd year science credit!!!**
  - Designed for 10th or 11th grade students, this survey course exposes students to major concepts they'll encounter in a college engineering course of study. Topics include mechanisms, energy, statics, materials, and kinematics. Projects include:
    - VEX Compound Machine Design (combination of three simple machines)
    - Solar-Hydrogen Fuel Cell Car (with a race at the end)
    - VEX Machine Control Design (construct and program a robotic arm, elevator soccer goal light, cookie topper machine, or an automated guided vehicle)
    - Marble Sorter (which sorts 3 different types of marbles into different bins)
    - Design and program a robot to deliver a coke and donut to the teacher next door

- **Computer Integrated Manufacturing (CIM)… this course counts as 5.0 on GPA like AP!**
  - Students learn about manufacturing processes, product design, robotics, and automation. Students develop their knowledge and skills of Computer Aided Design and Manufacturing to produce products using a Computer Numerical Controlled (CNC) mill and lathe. Students collaborate to design, build, and program factory system models. Students can earn a virtual manufacturing badge recognized by National Manufacturers. Projects include:
    - Design and build VEX line-follower robots to follow a designated path
    - Build products in CAD and program the CNC mill or lathe to manufacture them
    - Program a robot arm to stack objects and interact with VEX equipment
    - Design & build a simulated factory system using multiple robot arms & VEX equipment

- **Engineering Design and Development (EDD)… this course counts as 4th math credit!!!**
  - In this capstone course, students work in teams to design and develop an original solution to a valid open-ended technical problem by applying the engineering design process. Students perform research to choose, validate, and justify a technical problem. After carefully defining the problem, teams design, build, and test their solutions while working closely with industry professionals who provide mentoring opportunities. Finally, student teams present & defend their original solution to an outside panel. This is a GREAT experience for our students!

Computer Science Pathways at VBHS

I. Programming

a. **Programming I** is a year-long course that explores three different types of programming. It starts out with block-based programming and creating mobile apps in MIT App Inventor. Then transitioning into virtual robots, using Vex.Vr. Then ending the course with text-based programming using the Python programming language.

b. **Programming II** is a year-long course using Python as the primary tool for learning. The course promotes computational thinking and coding fundamentals and introduces computational tools that foster creativity. Projects and problems include app development, visualization of data, cybersecurity, and simulation.

c. **AP Computer Science A** is a year-long course in Java programming. Topics include object-oriented programming, data structures, conditionals, iteration, and recursion. If none of those terms sound familiar, no problem. No previous programming experience is required; however AP CS A is the capstone course in Programming Pathway.

II. Cybersecurity

a. **Cybersecurity I** is a year-long overview of major topics in the field of cybersecurity. These topics include personal and system security, network security, and cryptography. Students use a virtual lab to recognize & remediate security breaches. Exercises are based on real-world cybersecurity problems.

b. **Cybersecurity II** is a year-long course which dives deeper into cybersecurity, especially networking. Students learn how to build and protect networks using virtual labs.

c. **Cybersecurity III** is a year-long course with advanced topics in cybersecurity.

III. Robotics

a. **Robotics I** is an introduction to robotics. Students will learn how to program a virtual robot then move on to building and programming a simple robot.

b. **Robotics II** deals with more advanced topics in robotics. Students will learn more about sensors and work with more advanced robots.

c. **Robotics III** introduces students to more complex coding and introduces students to a more advanced understanding of robot circuitry.

FOOD SAFETY & NUTRITION

Teacher: Mrs. Cazzell
Email: christina.cazzell@vbsd.us

What is Food Safety & Nutrition? Topics that we study in this class:

- Health & Hygiene in the workplace
- How to clean & sanitize food service equipment
- How to prevent the contamination of food
- Foodborne Illnesses, what they are and how to prevent them
- Nutrition / Nutrition related health problems
- Kitchen Organization & Maintenance
- Meal Planning

Pre-requisite class to take before this class: Family & Consumer Science (FACS)
How can I be a completer in this pathway?

First: take FACS
Next: take Food Safety & Nutrition
Last: take Food Production & Management

Labs: we have 1-2 labs per month that we complete in the kitchens
Examples of those labs:

- Pizza Dough
- Tollhouse Chocolate Chip Cookies
- Pupusas
- Pancakes
- Protein Bagels
- King Cake
- Fettuccini Alfredo

If you enjoy learning about the kitchen, how it works and what is best and safe for the food that is prepared in the kitchen–then this class is for you! You must be willing to work closely with others in the class, even if you don't know them! This class is not a study hall, we do have open note assessments for each unit. There are projects and classwork that are required other than just the labs. We have a great time in this class, and I look forward to the 2025-2026 school year! Please email me with any questions that you may have!

Information on Fashion and Interior Design Pathway

FACS Units of Study -The basic course you have to take before you move on to the fashion and Interior design Pathway.

- FCCLA-Student Led Organization affiliated with FACS/FACS Pathways
- Positive Choices-Self Esteem, Relationships, Stress Management
- Housing Options-Learn about Housing and various options available to you
- Textiles & Sewing-Learn about all kinds of fibers and textiles and learn sewing basics
    - Sewing a Monster for elementary buddies
- Child Development/Parenting-All the basics you need to know!
- Foods & Nutrition-Food Groups, Eating Healthy, Balanced Meals, Recipes
- Personal Finance-Banking, Credit Score, Writing Checks, etc.
- Career and Workforce Readiness-Job Interview Skills, Resume, Do's & Don'ts

***Fashion Interior Design Units*-**This is the Level 2 Course in the Fashion Interior Design Pathway

- Clothing History & Trends-Learn about the history of clothing and fashion. You will research and have a big project over each decade in fashion and also learn about fashion trends!
- Housing History & Trends-Learn about the history of houses, research them from early times until the current day, and learn about trends in housing past and present, and you will have a housing history project as well where you will pick a decade and type of home and show off what you learned about!
- Elements & Principles of Design in Fashion & Interior Design
- Textiles & Sewing
- Various Sewing Projects
    - Pajama Pants
    - Travel Pillow
    - Plain Pillow
    - Coasters/Placemats
- Textiles, Fashion, & Interior Design Careers

(continued on next page)

<u>Advanced Fashion Interior Design Units</u>-This is the Level 3 Course in the Fashion Interior Design Pathway

- Various Advanced Sewing Projects
    - Pin Cushions
    - Blankets
    - Pillows
- Fashion Merchandising-Learn about Fashion Shows, marketing, different types of merchandising stores, and more!
- Fashion & Interior Design Careers-You will research and learn about a multitude of fashion careers and also interior design careers that you might be interested in.
- Commercial Design-What goes into building and effectively and efficiently running buildings like banks, hospitals, spas, hotels, and more?
- Floor Plans-You will create various floor plans and interior elevations!

★ Level 2 and 3 fashion interior design classes get the chance to work in our school store, the Pointer Place-helping check out customers, stocking merchandise, helping with social media, organizing merchandise, putting orders together, and actually making the shirts, hoodies, sweatshirts, and other merchandise!

★ If you are interested in interior design, homes, floor plans, architectural work, fashion, merchandising, creating clothing designs, sewing, knitting, trends in housing or fashion, or maybe even just curious about any of the above, you will enjoy this pathway! Do not take this pathway if you are looking for a free period or study hall-We do have weekly assignments, notes, activities, and checkpoints along the way, and of course many hands-on projects!

★ <u>**Prerequisites**</u> for this pathway-Family Consumer Sciences (FACS)

★ Level 2 Course-Fashion and Interior Design

★ Level 3 Course-ADVANCED Fashion Interior Design

Information on VBHS Education Pathway

Teacher: Monika Berry
Email: monika.berry@vbsd.us

Embarking on a career in education offers a rewarding journey that combines passion for learning and the opportunity to make a meaningful difference in the lives of students. Whether your passion is mathematics, art, or agriculture - there is a place for you in Education.

For those interested in becoming educators, one of the most effective pathways starts with introductory courses in education: Introduction to Education and Education Technology. In the Introduction to Education class, you will be given a basic understanding of the ins and outs of teaching. This along with learning your "why" on what is driving you to become an educator is a great start for any young person making considerable thoughts about a career in education.

In the Education Technology class, you will learn about using technology in the classroom, modifications/adaptations for students, and creating activities geared towards specific subject areas. Technology has become an integral part of our society and having the knowledge to use it to its highest potential is what we strive to achieve by the conclusion of this course.

In both courses you have the opportunity to travel to host schools in our district to observe teachers, learn how they operate their classrooms, and get first hand experience with students. This is a great way for education students to see first hand if this is something they are wanting to make a career of for many years to come.

A big event that the education pathway students prepare together during the year is the 5th grade leadership day. The leadership day is full of teaching 5th graders skills needed to be a better leader in their schools. We prepare a full schedule, create leadership games, and mold the skills students already have into leadership skills.

Over the course of the pathway there are many opportunities to gain volunteer hours, lead groups in various events throughout the district, as well as the opportunity to become certified in different areas, including Google Certifications and the Paraprofessional Certification. This program floods any aspiring educator with experience and opportunities to start their journey as a teacher.

Career Pathway for Business (Accounting)

Teacher: Scotty Milton
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Arkansas Career and Technical Education

Career Pathway Chart

2024 – 2025

Career Cluster: Finance
Career Pathway: Accounting

Accounting

2024 – 2025 Standards

Junior High / Middle School		
Keyboarding	KeyCode	Office Technology Skills
Technology Essentials	Introduction to Business & Marketing	Exploring Business Applications
Business Innovation		
High School		
Foundation: Choose one or more of the following courses.		
Survey of Business		
Concentrator: For a student to be a concentrator they must pass a foundation course AND one of the following courses.		
Supply Chain & Logistics	Accounting I	
Completer: For a student to be a completer they must pass a foundation, concentrator, and completer course (3.0 credits).		
Accounting II		
Supporting:		
Personal Finance		

Information About VBHS Concurrent Automation Technology Program

(*this pathway starts in 10th grade*)

Dr. Joe McLean

Contact Info: phone/text: (479) 474-6821 Ext. 1758 email: joe.mclean@vbsd.us
or directly at (479) 310-0714

Prerequisite: These are all concurrent courses (for college credit), but ATU has recently relaxed registration requirements with no minimum ACT score to get in. It is recommended that students have a minimum of a 2.0 GPA and be willing to attend class regularly.

What will you do in this class? In the 1st semester, you will learn the basics of electricity, then in the spring semester you will learn how to program one of our 4 real-world industrial robotic arms using the teach pendant controller… starting with very simple commands to move the arms from one point to another, pick up and move items using the claw and vacuum suction cup, and then write a program for the arm to draw a picture or perform any type of task, perhaps such as fixing a cup of coffee or playing Jenga. :) Students also learn how to solder using 3 soldering kits called "My Place", "Awesome USA", and "The Awesome Cube," which are fun to learn with LOTS of flashing lights. **If you'd like to see pictures and video clips of what our students do in these classes, go to YouTube, search for "VBHS Robot"…and click on "VBHS Recruiting Video for Robot & Electronics Automation Fall 2024"**

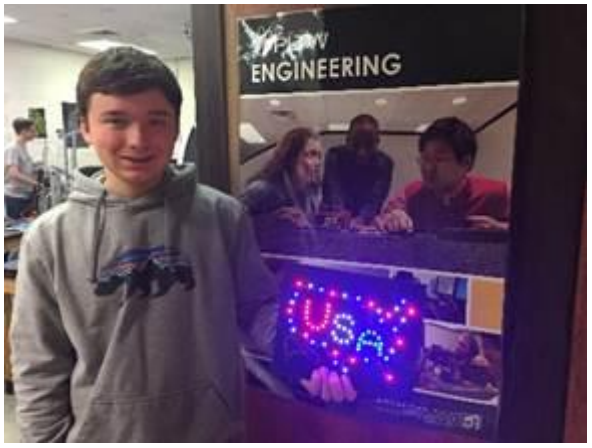
What types of students would be interested in taking these classes?

- **If you're not sure you want to go to 4 years of college** and want a program with several "off ramps" to start your career…after only 1 or 2 years of college or even right after high school.
- If you want a degree in this field and would love to get a head start with **up to 15 hours of college credit**.
- If a technology degree that is **algebra-based (don't have to take calculus)** is attractive to you.
- If you're interested in taking a **class that's more hands-on** than learning out of a book or lecture-based.
- If you like knowing that a good job is available here in the River Valley (as well as other locations) when you're ready to work…knowing you will be learning skills that are marketable anywhere.
- If you want an **opportunity as an apprentice at a local business** to gain experience, **starting the summer of your junior year in high school (several of our students are doing this at ABB).**
- If you're interested in touring plants to see what types of industry jobs are in our area.

If your child likes math and science and has even a remote interest in robots, programming, electronics technology, or any technical field where learning problem solving and troubleshooting skills would definitely help them, **I would encourage them to try this class.** There is more info about all the robot automation classes in this 3-year program on the back of this page. If you have questions, feel free to email or call me using contact info above.

Kevin demonstrating the ABB robot to a legislator "CTE Day" in Little Rock

The Ultimate Robot, "R2-D2"



Noah showing off his "Awesome USA" Project

Class Sequence for Concurrent Automation Technology Program

- **Fundamentals of Electricity** (AC & DC) - 1st year Fall semester
  - A study of the fundamental principles of AC & DC and Ohm's law. Series, parallel, combination circuits, & DC meters are introduced. **Students will learn how circuits work** and how to troubleshoot problems with the circuit, which will help them in the following semester with their soldering projects!
- **Introduction to Industrial Robots -** 1st year Spring semester
  - **This course will develop the skills required to solder electronic devices** and circuit board-mounted components. Students will demonstrate their soldering skills by successfully completing 3 soldering projects (My Place, Awesome USA, and The Awesome Cube) using both through-hole and surface mount soldering. **In addition, students will learn the basic operation and programming of the six-axis ABB robotic arm** using a teach pendant. In the manufacturing facilities of the future, robotic literacy may become as important as personal computer literacy has become in the office of today. **Students will create programs for the robot arm to perform various tasks (such as making waffles, dancing to a song, playing Jenga, or making a smoothie). :)**
    <u>This class is very hands-on and a favorite among students!</u>
- **Introduction to Industrial Automation -** 2nd Year
  - Covers fundamentals of motors and motor control. Includes switches, relays, transformers, three-phase power systems, DC motors, single-phase motors, three-phase motors, overload protection, and motor controllers. **Students primarily learn how to use ladder logic to wire electric relay control systems** to operate equipment in a desired sequence (utilizing safety interlocks as well).
- **PLC Applications -** 3rd Year
  - Provides the student with an overview of the selection, programming, and operations of programmable logic controllers (PLCs). The student will learn how to **program PLCs** using "ladder logic" diagrams in computer simulations (utilizing LogixPro software) **to open garage doors, pump materials in and out of a reactor, control an elevator, etc.** and in actual hardware wired up to a PLC learning system.

As a final note, I want to make sure that students (& their parents) are not thinking the classes in this program are too difficult. The <u>overwhelming</u> majority of students in these classes get A's… and a B is not going to keep a student from getting a job. These classes are for students who are not sure they want to commit to a 4-year degree from the very beginning. If it works out that way, they can still pursue a 4-year degree when they get to that point… and most companies will pay for it. This is a GREAT opportunity for <u>ANY</u> student who thinks this looks interesting to them & will attend class regularly. There is very little homework since the equipment is at school. So, why not give it a shot?

VBHS 4-YEAR PLAN (with Career Elective Options)

Student Name: _____Date: _____ Advisor: _____

	FRESHMAN YEAR	SOPHOMORE YEAR	JUNIOR YEAR	SENIOR YEAR
English	English 9	English 10	English 11 or AP Lit & Comp	English 12 or AP Language or Comp I/Comp II or Transitional Eng 12
Math	Algebra I or Geometry	Geometry or Algebra II	Algebra II or College Alg/Trig or Algebra III or AP Statistics	Algebra III or Transitional Math or College Algebra or College Alg/Trig or AP Calculus or AP Statistics
Science	Physical Science	Biology or AP Biology	Chemistry or AP Chem Physics or AP Phys or Environmental Science	
History	Oral Comm & Keystone (½) / Civics (½)	World History or AP World History	US History or AP US History	
Elective (Reqd)			Health (½) / P.E. (½) (or Sports/Archery/ Fishing/Dance/Cheer)	Economics (½) / Fine Arts (½) (or Band / Choir)
Career Elective	Intro to Engineering	Principles of Engineering^	Comp Int Manufacturing*	Engineering Des & Dev^
	Principles of Biomed Sci	Human Body Systems*	Medical Interventions	Biomed Innovations
	Comp Sci Programming 1~	Programming 2 or CS or VEX~	Cyber Sec 2 or VEX 2	AP Comp Scl A~
	Concurrent	Fund Elec / Intro to Robots	Industrial Automation	Programmable Controllers
	Survey of Business	Med Off Admin or Accounting I	Business Law or Acc II^	*Internship*
	Survey of Ag Systems	Plant Sci or Natl Res & Eco*	Adv Plant Sci or Forestry	
	Family & Consumer Science (FACS)	Food Safety & Nutrition	Food Production	*Entrepreneurship Experience*
		Fashion & Interior Design	Adv Fashion & Int Design	*Entrepreneurship Experience*
	Child Growth & Development	Intro to Education	Education Technology	AP Psychology
Elective	Sports / Band / Choir / Cheer / Dance / ROTC	Sports / Band / Choir / Cheer / Dance / ROTC	Sports / Band / Choir / Cheer / Dance / ROTC	Sports / Band / Choir / Cheer / Dance / ROTC

GRADUATION REQUIREMENTS:

___ Four units of English
___ Four units of Mathematics
___ Three units of Science
___ Three units of Social Studies / History
___ One-half unit of Health
___ One-half unit of PE
___ One-half unit of Fine Arts
___ One-half unit of Oral Comm

22 total units (including Electives)

Highlighted courses are now weighted credit! They count as 5.0 (just like AP courses) toward your GPA!

* These classes can take the place of the 3rd year science requirement (Chemistry) in your schedule.
^ These classes can take the place of the 4th year math requirement (past Algebra II)
~ Any of the computer science classes can take the place of a 3rd year science OR a 4th year math

CTE Pathways offered at VBHS

(most accurate and up-to-date version)

Pathway	9th Grade	10th Grade	11th Grade	12th Grade
Biomedical Science	Principles of Biomedical Sciences (PBS)	Human Body Systems (HBS)	Medical Interventions (MI)	Biomedical Innovations (BI)
Pre-Engineering	Introduction to Engineering Design (IED)	Principles of Engineering (POE)	Computer-Integrated Manufacturing (CIM)	Engineering Design & Development (EDD)
Automation Technology (*Concurrent with ATU*)		Fundamentals of Electricity (AC/DC) / Intro to Industrial Robotics	Intro to Industrial Automation	Programmable Controllers / *Apprenticeship* *(optional)*
Computer Science	Programming 1	Programming 2	AP Computer Science	
		Cybersecurity 1	Cybersecurity 2	Cybersecurity 3
		Robotics 1	Robotics 2	Robotics 3
Agricultural Science	Survey of Ag Systems	Plant Science	Advanced Plant Science	
		Natural Resources & Ecology	Forestry & Wildlife Ecosystems	
Business	Survey of Business	Computerized Accounting I	Computerized Accounting II	*Internship*
		Medical Office Administration		*Internship*
		Business Law 1/2		*Internship*
Family & Consumer Sciences (FACS)	Family & Consumer Science	Food Safety & Nutrition	Food Production Management & Services	*Entrepreneurial Experience*
		Fashion & Interior Design	Advanced Fashion & Interior Design	*Entrepreneurial Experience*
Education	Child Growth & Development	Intro to Education	Education Technology	AP Psychology
JROTC	ROTC 1	ROTC 2	ROTC 3	ROTC 4

Google Doc with
Info for All VBHS Career Pathways

Career Night Survey
& Suggestions for Next Year's Event

Click on this link or scan below:

https://docs.google.com/forms/d/e/1FAIpQLSdJJARhtFZNPsXnSfVq7VdKFf1jx_Ic2eghUbYCrMWej8C79w/viewform?usp=sharing