TRIPLETT TECH PROGRAM REFERENCE GUIDE 2022

The purpose of this guide is to provide information for students, parents, teachers, and counselors about the programs offered at Triplett Tech.

Students may be asked to complete an application for enrollment which can be found in your home school's counseling office.

Please note that certain programs have enrollment requirements, limitations and/or prerequisites. All criteria must be met in order for a student to enroll in the program.

Safety concerns: Certain programs at Triplett Tech have potentially hazardous lab situations and dangerous equipment. Please be mindful of this when scheduling students with evident compulsive or inappropriate behavioral issues.

Shenandoah County Public School Non-Discrimination Statement

In accordance with the requirements of the Civil Rights Act, Shenandoah County Public School System hereby announces that it does not discriminate on the basis of race, color, age, sex, religion, national origin or handicapping conditions. For more information, please see the SCPS policy manual.

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TRIPLETT TECH
"Producing highly skilled future employees"
6375 S. Main Street, Mt. Jackson, VA 22842
(540) 477-3161

GENERAL INFORMATION

Triplett Tech has been serving high school students for over 50 years by providing them with a quality industry-based education. Triplett has 14 career programs which prepare students to enter the workforce. Our programs include automotive technology, carpentry, CISCO networking, auto body technology, emergency medical technician, firefighter, cosmetology, criminal justice, culinary arts, cyber security, electricity, health care science, masonry, medical systems administration, nurse aide, and early childhood education. One of our goals is to produce highly-skilled future employees.

Some of our programs offer students the opportunity to dual enroll with Lord Fairfax Community College (becoming Laurel Ridge). Dual enrollment affords the student an opportunity to earn college credit while in high school at a much reduced rate. Additionally, at the conclusion of each of our programs, students will have the opportunity to earn a nationally recognized, industry-specific credential or certification. These certifications will assist the student in being ready to join the workforce. In some cases, the student will need the certification to continue in their preferred career field.

Triplett Tech's philosophy is that liberal education and career and technical education are both essential and compatible in preparing individuals for becoming a productive member of society and earning a living. The value of both liberal and technical education must be recognized as essential for the attainment of future goals for our youth, for our county, for our state, and for our nation. This institution also believes its duty is to provide guidance and advanced training in one's chosen profession.

OUR MISSION

Our mission is to provide a quality education through shared responsibility in a safe supportive environment for all students to meet the challenges of a global society.

Our goal and responsibility is to help each student develop an enthusiasm for learning, a respect for self and others, and the skills to become a creative independent thinker and problem solver.

ENROLLMENT INFORMATION

Program Length
Triplett Tech offers both one and two year programs. For two year programs, first year students attend in the afternoon while second year students attend in the mornings. All programs follow the Shenandoah County Public School calendar.

ONE YEAR PROGRAMS	TWO YEAR PROGRAMS
CISCO NETWORKING	AUTO BODY TECHNOLOGY
NURSE AIDE	AUTOMOTIVE TECHNOLOGY
CRIMINAL JUSTICE	CARPENTRY
CYBER SECURITY	COSMETOLOGY
EARLY CHILDHOOD EDUCATION	CULINARY ARTS
EMT	ELECTRICITY
FIREFIGHTER I	MASONRY
HEALTH CARE SCIENCE/CERTIFIED MEDICAL ADMINSTRATIVE ASSISTANT	

Who May Enroll
All prospective students must complete an application for enrollment. Primarily juniors and seniors from Shenandoah County Public Schools may enroll at Triplett Tech. Juniors are encouraged to begin the two year programs, while either juniors or seniors are encouraged to enroll in the one year programs. Seniors are allowed to apply for enrollment in the first year of a two-year program as space allows. Graduating seniors who complete the first year of a two-year program are allowed and encouraged to return to complete their second year as a "postgraduate" student for a $50 per semester fee ($100 for a year).

Freshmen and sophomores interested in pursuing a career in a health related field are encouraged to apply for the one semester Introduction to Health and Medical Sciences course. More information is available about this program in the Health Care Science section.

Credits
Both first year and second year high school students earn 2 credits per semester for a total of 4 credits for the year.

Insurance
Triplett Tech is not responsible for accidents occurring to students in connection with class, laboratory experiences, field work, student activities, travel or other activities. Students should carry an accident policy.

Fees/textbooks

All required textbooks are provided at no charge to the student. Each program has a nominal fee for consumable items and/or require the student to purchase tools, boots, etc. See program descriptions for details on the fees associated with each program. Students enrolled in dual enrollment courses are required to pay the dual enrollment fees associated with the dual enrollment courses.

Calendar
Triplett Tech follows the Shenandoah County Public School calendar. This includes all grading periods, holidays, early dismissals, and delays/closings for inclement weather.

Program Selection
Due to the high demand of many of our programs, students are encouraged to select an alternative program. The Reference Guide is organized by career clusters to assist students in thinking about multiple career paths within the same cluster. Upperclass students will be given first priority for high demand classes that have limited seating. Due to the popularity of programs, seats available for second year programs are decided upon grades, behavior, attendance, and teacher recommendations. First year students may be asked to participate in an interview if programs are over capacity after course selection.

**Economics and Personal Finance**
First year students enrolled in a two-year program (Auto Body Technology, Automotive Technology, Carpentry, Culinary Arts, Electricity and Masonry) will be enrolled in Economics and Personal Finance at Triplett Tech; thus, this will not need to be scheduled during time that the student is at the home school.

Employability Skills
Business and industry is increasingly competitive and employers in all sectors are looking for people who are dependable, flexible, and take initiative. Employability skills are at the heart of each program at Triplett Tech and students are taught and held accountable for a set of standards based on employability skills.

Career Counseling
Students have access to a Career Counseling Coach at Triplett Tech. The Career Counselor will work with students both in the classroom and individually to develop career portfolios. Additionally, each senior will leave Triplett with a professional resume and have the opportunity to interview with business professionals at our annual Career Fair held in the Spring.
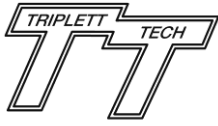
TRIPLETT BUSINESS AND TECHNICAL CENTER
(540) 477-3161
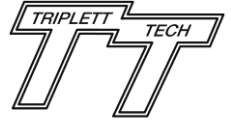
APPLICATION FOR ENROLLMENT

RETURN THIS COMPLETED FORM TO THE COUNSELING CENTER AT YOUR HIGH SCHOOL.

Name (Please print) _____ High School_____

                                      Last   First   M.I.

Please list your top three program selections in order of preference:

    1. _____

    2. _____

    3. _____

What made you decide to apply to Triplett Tech? _____

What are your career aspirations? _____

Father's Name	
Place of Employment	
Work Telephone #	
Mother's Name	
Place of Employment	
Work Telephone #	

SAMPLE FORM

PROGRAMS OF STUDY

Auto Body Technology
Automotive Technology
Carpentry
Computer Networking
Cosmetology
Criminal Justice
Cybersecurity
Early Childhood Education
Electricity*

EMT
Firefighter
Intro to Health & Medical Sciences*
Health Care Science*
Masonry
Medical Systems Administration*
Nurse Aide

*Students have the option to dual enroll these courses with Lord Fairfax Community College (becoming Laurel Ridge).

CAREER & TECHNICAL EVALUATION PROCESS (CTEP)

The Career and Technical evaluation process is a short CTE assessment available to all high school students residing in Shenandoah County who are interested in attending Triplett Tech.

CTEP is...
The Career and Technical evaluation process, is a short CTE assessment available to all high school students residing in Shenandoah County who are interested in attending Triplett Tech.

CTEP assesses students' ...	CTEP helps students gain...
Strengths, weaknesses, motivation and interest levels in their chosen program choice(s).	A better understanding of program requirements, expectations and what is beneficial for program preparation.

CTEP Process...
Student, along with case manager or school counselor review and choose 1-3 programs of interests using the Triplett Tech Reference Guide ↓ Complete CTEP referral application and emergency form and get signed by parent/guardian. Provide a copy of student's IEP/504 Plans ↓ Student's CTEP referral paperwork is sent to Jamie Armentrout @ Triplett Tech ↓ CTEP Evaluation is scheduled and confirmed via email ↓ Students ride their high school bus to and from Triplett on scheduled morning, Jamie Armentrout will meet them in the main lobby and stay with them during the entire evaluation ↓ A written CTEP report is sent to case managers/school counselors along with a copy for parent/guardian

Additional questions or need more information? Please contact:
Connie Pangle (crpangle@shenandoah.k12.va.us) or Jamie Armentrout (jharmentrout@shenandoah.k12.va.us)

SPECIAL EDUCATION INFORMATION

The educational opportunities provided at Triplett Tech are technical in nature, not general education or an alternative education setting.

Case managers should refer the student to the CTEP process outlined above if there are concerns regarding a student's capabilities relative to the task demands of the technical program(s) of interest.

Keep in mind that for safety reasons, all classes require students to be able to read safety labels (ex. Fire extinguisher labels, poisonous labels, etc.). Also, most programs do currently have a state and/or national certification assessment that students are offered at the end of the program. These assessments may or may not allow accommodations during testing and are determined by the testing agency.

DUAL ENROLLMENT INFORMATION

Several programs offered at Triplett Tech award college credit for a corresponding course at Lord Fairfax Community College (becoming Laurel Ridge). This dual enrollment opportunity was arranged to promote effective and efficient use of educational resources of the Commonwealth and encourage qualified Triplett Tech students to pursue post-secondary educational opportunities that directly build on their learning at Triplett. This opportunity is designed for high school juniors and seniors who meet minimum admissions standards through Lord Fairfax Community College (becoming Laurel Ridge).

Students enrolling in dual enrollment courses will be required to complete the Lord Fairfax Community College (becoming Laurel Ridge) Admissions Application as well as satisfactorily meet prerequisite scores on both a math and English placement test if applicable. There is no charge to the student to either complete the application or complete the placement tests. We encourage students to discuss with their respective colleges of interest whether the dual enrollment credits would transfer if you plan to attend somewhere other than LFCC.

Currently the following courses offer dual enrollment opportunities:
- Electricity I & II
- Introduction to Health and Medical Sciences
- Health Care Science
- Medical Systems Administration

INDUSTRY-RECOGNIZED CREDENTIALS

An education and work-related credential can be defined as a verification of an individual's qualification or competence issued by a third party with the relevant authority to issue such credential determined by approval from the Virginia Department of Education (U.S. Department of Labor, 2010). The term credential encompasses educational certificates, degrees, certifications, and government-issued licenses. At Triplett Tech, all students completing a program will have an opportunity to earn an industry credential. Students may earn additional credentials that are not recognized by the Virginia Department of Education, but the credential is a value add in the workforce.

Under each program area a list of possible credential opportunities is listed.

STUDENT ORGANIZATIONS

Triplett Tech offers students the opportunity to join **SkillsUSA** a national nonprofit organization serving over a quarter million high school, college, and professional members in technical, skilled and service occupations. SkillsUSA is a partnership of students, teachers and industry working together to ensure America has a skilled workforce. SkillsUSA helps each student excel. SkillsUSA provides educational programs, events and competitions that support career and technical education (CTE) in the nation's classrooms. Students enrolled in any program at Triplett Tech are eligible to join SkillsUSA. There is a $15 membership fee to join and all students are encouraged to join.

Triplett Tech students involved with SkillsUSA will have the opportunity to compete at the district, state, and national level within their program. From job demonstrations to speaking and poster presentations, there are many opportunities for students to compete in the craft that they are studying. At the building level, students are able to engage in leadership driven activities with other SkillsUSA members to include planning building wide and community service events.

CAREER CLUSTERS & PROGRAM AREAS

A Career Cluster is a grouping of occupations and broad industries based on commonalities. Within each career cluster, there are multiple career pathways that represent a common set of skills and knowledge, both academic and technical, necessary to pursue a full range of career opportunities within that pathway – ranging from entry level to management, including technical and professional career specialties. Based on the skills sets taught, all CTE courses are aligned with one or more career clusters and career pathways. Career Clusters help students investigate careers and design their courses of study to advance their career goals. Being familiar with career clusters may help a student begin to narrow down their career path as well as to think about which programs at Triplett may help them reach their ultimate goals.

At Triplett Tech, we offer programs in the following Career Clusters:

- Architecture and Construction
- Health Science
- Hospitality and Tourism
- Human Services
- Information Technology
- Law, Public Safety, Corrections and Security
- Transportation, Distribution and Logistics

The remainder of the Reference Guide is organized according to career cluster providing an overview of the career cluster as well as specific details about each program within the cluster.
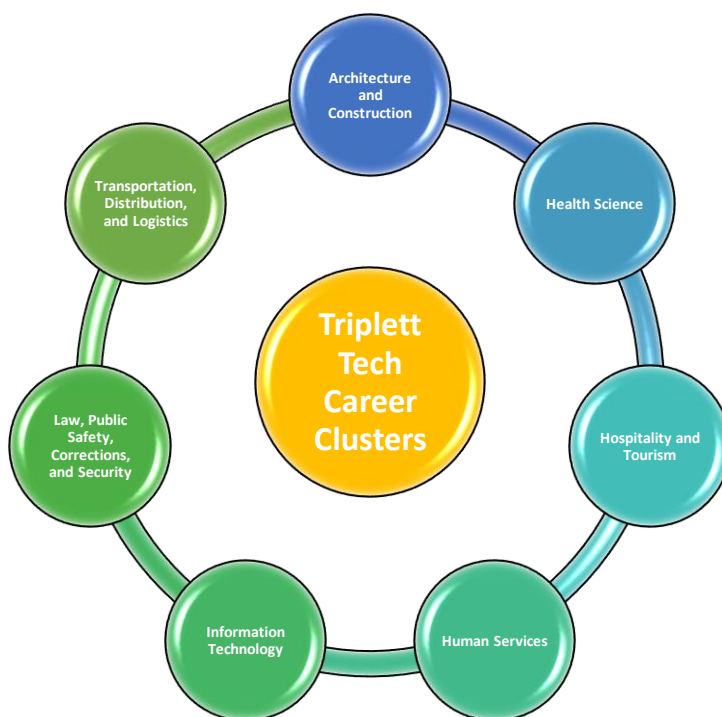
ARCHITECTURE AND CONSTRUCTION

| Carpentry | Electricity | Masonry |

OVERVIEW

The Architecture and Construction cluster is ideal for students who want to use their skills in design, planning, and management to work in careers constructing and maintaining structures such as buildings, homes, bridges, or machinery. Work opportunities include developing new structures, restorations, additions, alterations, and repairs. Construction is the pathway with the highest number of employment opportunities.

EMPLOYMENT PROJECTIONS

The Architecture & Construction cluster employed approximately 288,200 Virginians in 2016 and is projected to employ about 22,800 more Virginia workers in 2026, for a total of about 311,000. This represents approximately 8 percent growth in Virginia over the decade. Nationally, there is also expected to be 11 percent average growth among all occupations in this cluster by 2026, based on Trailblazers analysis of information from the Bureau of Labor Statistics ⬀.

Selected Occupation	2020 Median Wage	Predominant Education Level
Carpenter	$54, 200	High School & Training/certification
Construction Supervisor	$62, 970	High School & Work Experience
Electricians	$61,500	Associate/Some college & trainining/certifications
Construction Managers	$100,730	Bachelor's or more & training/certifications
Cement Masons and Concrete Finishers	$49,390	High School & Work Experience
Architects	$82, 320	Bachelor's or more & Training/certification
Brickmasons and Blockmasons	$56,750	High School & Training/certification
Electrical Power-Line Installers and Repairers	$74, 410	High School & Training/certification
Landscape Architects	$70, 630	Bachelor's or more & Training/certification

CARPENTRY

The Carpentry course is the building block for achieving high-level construction industry skills that can result in an exciting construction career. Students start with an understanding of the safe and proper use of hand and power tools. Students learn how to apply construction mathematics and interpret blueprints. Students will become proficient in identifying types of residential construction components to include form foundations and frame walls, floors, ceilings, roofs, doors and windows. Students may be involved in the construction of a storage building, a multitude of other class building projects, and in the construction of a modular house built on site at Triplett Tech.

Recommended Skills to Possess:
- Possess good hand-eye coordination and be able to climb and maintain their balance on ladders and scaffolding.
- Enjoy working both indoors and outdoors and be able to lift and carry objects weighing up to 50 pounds.
- Ability to work and get along with fellow classmates is essential as is being able to work independently.
- Prolonged standing, climbing, bending, and kneeling often are necessary.

Recommended Coursework and Experience with:
- Basic math operations
- Fractions
- Decimals
- Measurement to include reading a ruler to the 1/16"
- Algebra/Geometry

Supplies Needed for Course:
- Measuring Tape (25' minimum)
- Hammer-(16oz. minimum)
- Two nail sets (1/32,2/32, and/or 3/32)
- Square (speed square and/or combination square)
- Utility knife (retractable blade)
- Tool belt/nail apron
- Hard sole work boots
- Long pants

Credential/Certification Opportunities:
- Occupational Safety and Health Administration (OSHA-10) Construction Safety and Health Certification
- International Code Council Certificate
- AHA Lifesavers First Aid/CPR/AED

SAMPLE CARPENTRY MATERIAL

If a house is 26'x50', what is the area/square ft.

A = 1300 sq. ft.
B = 76 sq ft
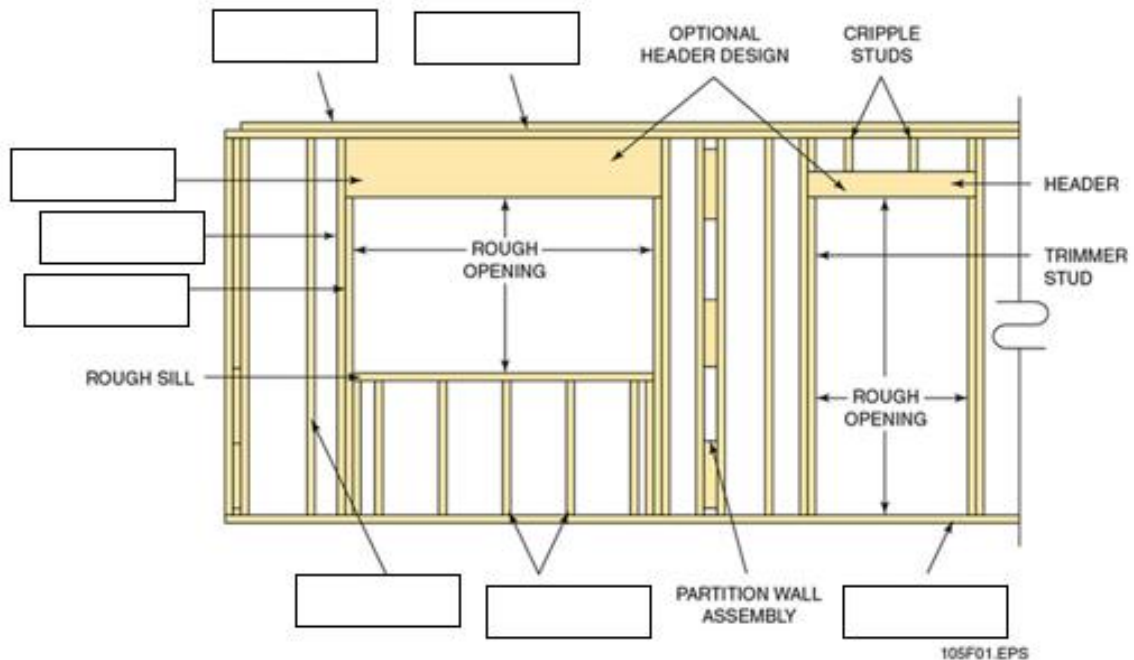C = 1300
D = 1326

How many sheets of plywood subfloor would it take to cover that same floor?
3/4" plywood subfloor come in a 4'x8' sheets. Round up to the nearest whole number.
A = 40
B = 41
C = 38
D = 42

Fill in the boxes with the appropriate wall parts:

Header   Sole Plate   Top Plate   Double Top Plate
Common Stud   Trimmer Stud   Cripple Stud   King Stud

ELECTRICITY

The Electricity program is designed to provide students with the necessary skills, concepts, and attitudes for entry into the fields of electrical installations, maintenance, manufacturing, service, and repair. Basic electricity, using the national electrical code are covered, as well as an introduction to planning, layout and installation of residential and commercial components associated with the electrician's trade. The course is taught with hands on instruction to include using the most advanced electrical tools and equipment. Typical projects include wall section work, onsite/offsite electrical installations/troubleshooting, and wiring a modular house.

This class is a two year program and students have the option of dual enrolling through Lord Fairfax Community College (becoming Laurel Ridge). In addition, adult night class is available for continuing education upon graduation towards completing your educational requirements for obtaining your Journeymen's Electrical License.

Recommended Skills to Possess:
- Be able to perform math calculations accurately.
- Possess the willingness to learn and follow directions.
- Ability to manipulate hand tools, power tools and electrical measuring equipment.
- Ability to work and communicate with fellow classmates is essential as is being able to work independently.

Recommended Coursework and Experience with:
- Basic math operations
- Fractions
- Decimals
- Measurement to include reading a ruler to the 1/16"
- Geometry

Supplies Needed for Course:
- Safety glasses "Z87"
- Leather work boots
- Shirt with 4" sleeves
- Pants - waist to ankle
- Belt if needed
- Basic electrical hand tools

Credential/Certification Opportunities:
- Occupational Safety and Health Administration (OSHA-10) Construction Safety and Health Certification
- International Code Council Certificate
- HILTI Certification
- AHA Lifesavers First Aid/CPR/AED

SAMPLE ELECTRICITY MATERIAL
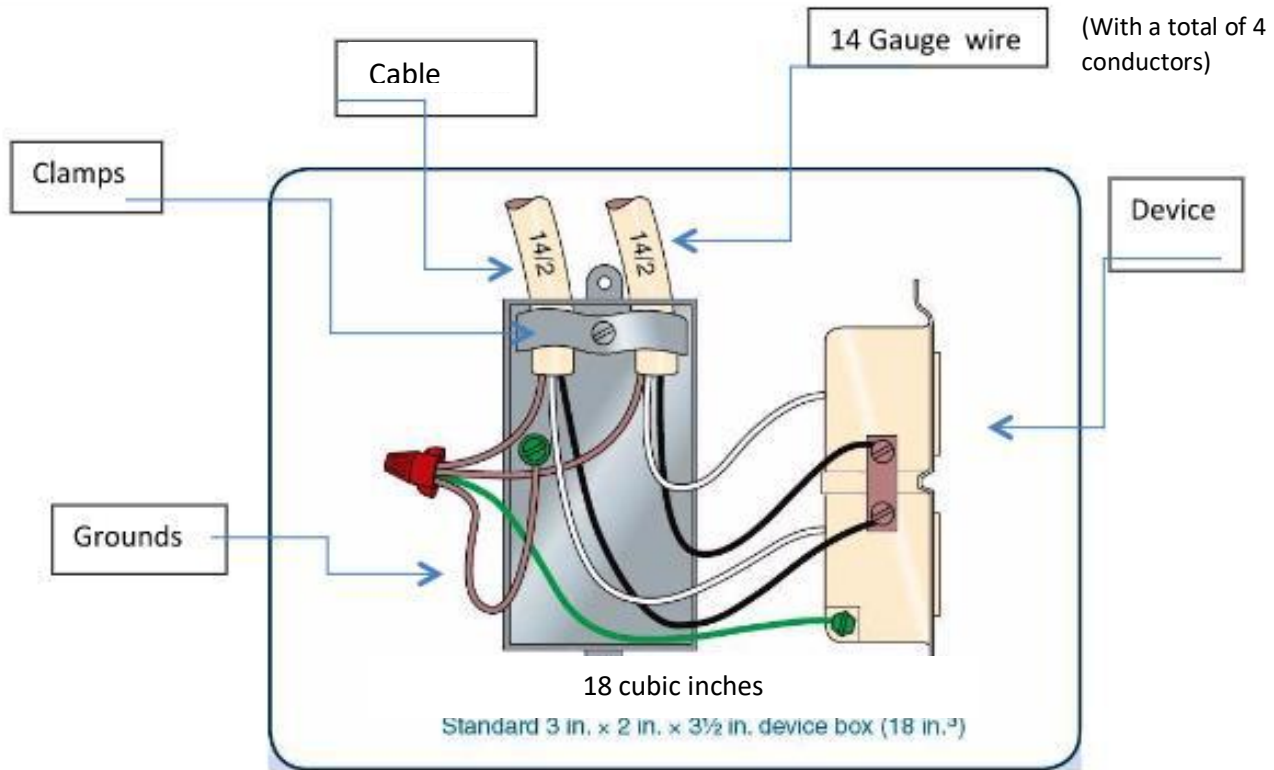
As an electrician it is your job to make sure there are enough cubic inches in each box to account for all wires and all devices. Take the information above and calculate box fill to determine if the current box is adequate in size.

Steps
Each conductor totals -**1 pt**
All ground wires total - **1 pt** (1 or 5 ground wires – still equals 1)
Each device totals - **2 pt**
All clamps total - **1 pt**

Example:		**Above picture**	
Total Conductors	6	Total Conductors	_____
Grounds	1	Grounds	_____
Device	2	Device	_____
Clamps	1	Clamps	_____
Total	**20**	**Total**	_____
For 14-gauge wire use a multiplier of **2**		**Multiplier** **x 2**	_____
Answer 20 X 2 = 24 in³		**Answer**	**in³**

MASONRY

The Masonry Program will prepare students for entry into an apprenticeship program in the masonry field. This is a hands on class where students will learn the proper use of hand tools, trowels, levels and spacing rulers, squares, and layout. This class will also feature beginning brick and block laying to setting proper elevations. Students will also learn about various types of mortar and mixtures, corner construction and proper reinforcement. Concentration will also be stressed regarding job safety, products, usage, different brick and block types, and proper scaffold set-up/removal.

Students interested in a career in landscaping and/or landscaping design will also benefit from the skills and knowledge gained in this course to prepare them for laying pavers and retaining walls used in many landscaping projects. Students can take pride in being part of the construction of permanent structures within the community.

Recommended Skills to Possess:
- Be in good physical condition. Students with asthma or other breathing difficulties are advised to speak with their physician before enrolling.
- Be able to lift and carry objects weighing 50 pounds or occasionally up to 100 pounds.
- Be able to work easily and skillfully with their hands.
- Be able to cooperate with others, as masons often work in teams.
- As students are working with hand and power tools, it is imperative that students are able to follow the specific safety rules for this course.
- Ability to understand patterns as well as depth perception, and hand/eye coordination.

Recommended Coursework and Experience with:
- Basic math operations
- Fractions
- Decimals
- Measurement

Supplies Needed for Course:
A. Safety glasses "Z87"
B. Leather work boots
C. Shirt with 4" sleeves
D. Pants - waist to ankle
E. Belt if needed
F. 5 Pencils
G. 1 Notebook/paper

Credential/Certification Opportunities:
- Occupational Safety and Health Administration (OSHA) Construction Safety and Health Certification
- NOCTI Brick Mason Certification
- HILTI Certification
- AHA Lifesavers First Aid/CPR/AED

SAMPLE MASONRY MATERIAL

Mark the following measurements on the ruler below: 3/16   2 ¼   5 1/8   10 ½
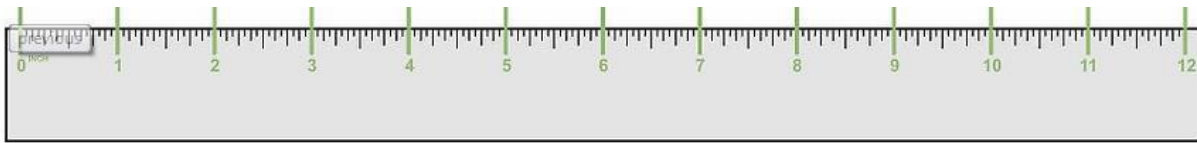
Identify the following brick patterns:
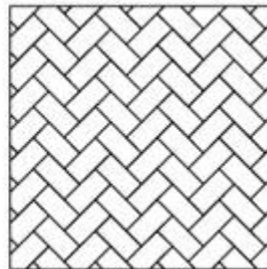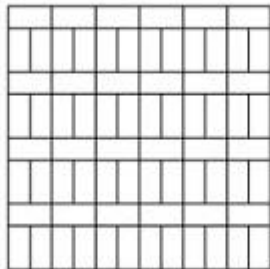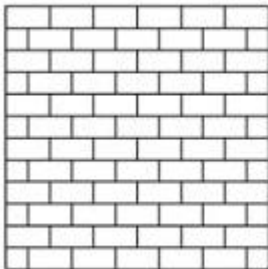
You are asked to build a wall that is 15-feet-long and 6 feet high.

    What is the total square feet of the wall?

    How many bricks are in a square foot of the all area? Estimate that 7 bricks in each square foot of wall area. (There are actually 6.75 bricks to a square foot but to allow for waste and broken bricks estimate 7).

Lawrence has built a wall that is 4 foot ¾ inch tall, it needs to be 12 feet 7/16 inch tall. How many more feet does Lawrence need to build?

HEALTH SCIENCE

| Introduction to Health & Medical Science | Health Care Science II | Medical Systems Administration | Nurse Aide I & II | EMT/Firefighter I |

OVERVIEW

The Health Science cluster prepares students to use their love of science to help keep people healthy and treat those who are not. Health care professionals work directly with people as a doctor or physical therapist or on their own by conducting research on diseases and other important health information. This field allows you to work in diverse environments such as hospitals, medical and dental offices, or labs.

EMPLOYMENT PROJECTIONS

The Health Science cluster is projected to experience about 21 percent growth in Virginia between 2016 and 2026, which exceeds the anticipated national average growth of 18 percent among all occupations in this cluster. This cluster employed approximately 306,300 Virginians in 2016 and is expected to employ over 63,500 more by 2026, which represents the greatest numeric increase of workers among all clusters. More than 369,800 Virginians are projected to be employed in Health Science occupations by 2026.

(http://www.doe.virginia.gov/instruction/career_technical/statistics_reports/career_clusters_snapshots/health.pdf)

Selected Occupation	2020 Median Wage	Predominant Education Level
Registered Nurses	$75,330	Bachelor's or more
Home Health Aides	$27,080	High School
Medical Assistants	$35,850	Some college/Associate Degree & Training/certification
Pharmacy Technicians	$35,100	High school diploma or equivalent
Physical Therapists	$91,010	Bachelor's or more
Nurse Aides	$32, 050	High School & Training/certification
Medical Records and Health Information Specialists	$45,240	Postsecondary nondegree award/certificate
EMTs and Paramedics	$36,650	Postsecondary nondegree award/certificate
Radiology Technician	$61,900	Bachelor's or more

HEALTH SCIENCE SAMPLE PATHWAYS

Students who are interested in the Health Science pathways are encouraged to take Health Care Science I as a starting point for entering the pathway. Students who have taken Health Care Science will have priority over those who do not when signing up for Nurse Aide.

11th Grade Fall Semester Introduction to Health & Medical Sciences	**11th Grade** Spring Semester Health Care Science	**12th Grade** Nurse Aide I & II
	11th Grade Spring Semester Medical Systems Administration	**12th Grade** EMT/Firefighting I
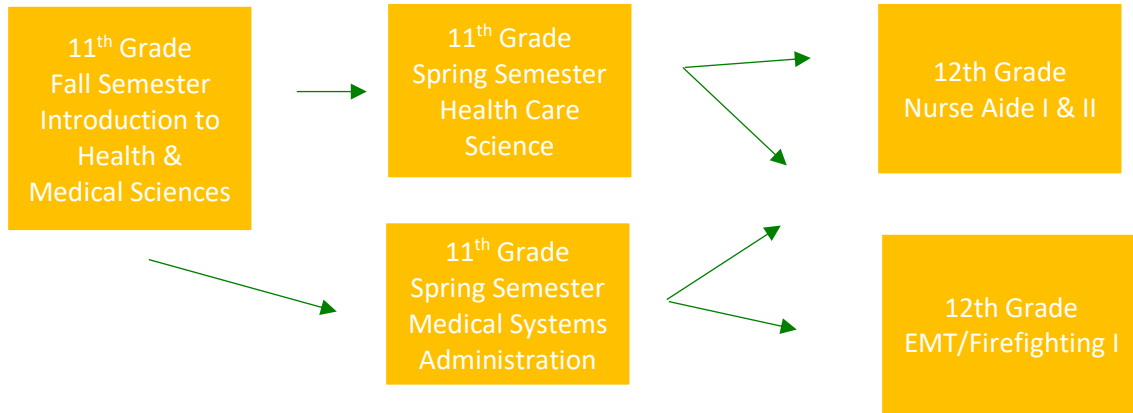
Triplett Tech Health Care Science Program provides building blocks to further programs at Lord Fairfax Community College (becoming Laurel Ridge)

- Certificate in Health Science
- Certificate in Medical Administrative Assistance/ Transcription
- Certificate in Medical Billing/ Coding
- Career Studies Certificate in Patient Care Technician

For more information on these programs, visit your home school Career Coach.

LFCC
Lord Fairfax Community College
Becoming Laurel Ridge

INTRODUCTION TO HEALTH & MEDICAL SCIENCE AND HEALTH CARE SCIENCE II

The Health Care Science course at Triplett Tech is designed to provide students a pathway into a health care related profession such as nursing, dental hygiene, EMT, phlebotomy, physical therapy, dietetics, medical administrative assistant, medical billing and more. Course content provides students with the knowledge and skills that are applicable to a variety of health care occupations. During this course, students will become oriented with the variety of health care occupations, learn in-depth medical terminology, medical office assistant duties, nutrition and dietetics and obtain AHA Lifesavers First Aid/CPR/AED certification.

Students may earn up to 6 dual enrollment credits each semester which may lead to the following Certificates from Lord Fairfax Community College (becoming Laurel Ridge); Health Science, Medical Administrative Assistance/ Transcription, Medical Billing/ Coding or the Career Studies Patient Care Technician Certification from LFCC. Introduction to Health & Medical Science Classes include: *Nutrition and Diet Therapy (HLT 130); Medical Terminology I (HLT 143); and Orientation to the Health Profession (SDV 101).* Health Care Science II classes include: *Human Anatomy and Physiology (BIO 145) and Medical Terminology II (HLT 144).*

Prerequisite: Students must have passed the Algebra I SOL or obtain a satisfactory score on the LFCC Math Placement Test. Students must also obtain a satisfactory score on the LFCC English Placement Test.

Recommended Skills to Possess:
- MUST be able to maintain confidentiality and honesty.
- MUST have excellent attendance record.
- Be able to effectively communicate both verbally and in writing.
- Possess basic medical math skills to include addition, multiplication, fractions, height/ weight, temperature measurements, food intake/ beverage intake and percentages/ ratios.
- Be able to work under pressure and under stressful situations in a busy office/ medical emergency environment.
- Physically able to stand/ walk for long periods of time, lift up to 50 pounds and have good dexterity.

Recommended Coursework and Experience with:
- Basic anatomy and physiology
- Algebra 1
- Charting/ graphing skills

Fees Needed for Course:
- $40 Lab Fee
- Dual enrollment fees as applicable

Credential/Certification Opportunities:
- AHA BLS CPR First Aid/AED
- National Health Science Assessment

SAMPLE HEALTH CARE SCIENCE MATERIAL:

Calculate the Ideal Body Weight (IBW) of a female patient who is 5' 6" tall using the following formula:
Ideal Body Weight (Hamwi method) M = 106 lb for the first 5 ft + 6 lb for each additional inch. F = 100 lb for the first 5 ft + 5 lb for each additional inch.

Determine the correct dosages for the following medication using basic algebra equations:
The MD prescribed IV therapy Isolyte S @ 125ml/hr for fluid replacement. You know that the drip chamber has 15 ggts (drops)/ ml. How many drops/ minute should the patient receive?

Match the following Respiratory System combining forms with the appropriate body meaning:
Nose   spir/o
Sleep   somn/o
To breath   pharyng/o
Lung   ox/o
Oxygen   trache/o
Windpipe   pneum/o

Words that end in –ologist refer to someone studying or being an expert in a certain topic. For example, a cardiologist is a specialist of the heart.
What does each –ologist specialize in?

Psychologist _____   Radiologist   _____

Neurologist   _____   Anesthesiologist _____

Write the correct medical term for the specialist of the following topics:
Skin   _____

Ear   _____

Lungs   _____

MEDICAL SYSTEMS ADMINSTATION

Students wishing to gain employment in the Healthcare field may take this course to learn how to use medical terminology and apply administrative procedures necessary to be productive employees in a healthcare environment. Students will learn how to manage office activities, enhance communication skills, identify legal and ethical issues in healthcare practices, manage financial functions, and enhance employability skills. Students will take the Certified Medical Administrative Assistant exam upon completion of this course.

Students may earn dual enrollment credits which may lead to the following Certificates from Lord Fairfax Community College (becoming Laurel Ridge); Health Science, Medical Administrative Assistance/ Transcription, Medical Billing/ Coding or the Career Studies Patient Care Technician Certification from LFCC. MSA Classes may include: Keyboarding II (AST 102), Medical Office Procedures (AST 271); Human Anatomy and Physiology (BIO 145); and Healthcare Information Systems (HIM 130).

Prerequisite: Students must have passed the Algebra I SOL or obtain a satisfactory score on the LFCC Math Placement Test. Students must also obtain a satisfactory score on the LFCC English Placement Test.

Recommended Skills to Possess:
- MUST be able to maintain confidentiality and honesty.
- Effective workplace skills.
- Substantial verbal and written communication skills
- Basic Medical Math: to include addition, multiplication, ratios, fractions, height/ weight, temperature measurements, food intake/ beverage intake percentages/ ratios.
- Be able to work effectively with people of all age levels.
- Be able to work under pressure and under stressful situations in a busy office/ medical emergency environment.
- Physically able to stand/ walk for long periods of time, lift up to 50 pounds and have good dexterity.

Recommended Coursework and Experience with:
- Basic anatomy and physiology
- Algebra 1
- Charting/ graphing skills

Fees Needed for Course:
- Dual enrollment fees as applicable

Credential/Certification Opportunities:
- AHA Heartsavers First Aid/CPR/AED
- Certified Medical Administrative Assistant Exam

SAMPLE MEDICAL SYSTEMS ADMINSTATION MATERIAL

Take the following patient information and write a SOAP formatted progress note in the space below. Be sure to put the given information in the correct part of the note as you write. Subjective, Objective, Assessment and Plan. You may add information to make the note "flow".

- 74 yr old female
- Hx of acute on chronic CHF
- Winded during speech2+ pitting edema bi lateral lower extremities
- BP 135/ 86,
- Wt 230#
- Upper GI endoscopy results showed gastric ulcer (not perforated at this time)
- consult dietitian for diet education
- blood glucose of 198
- overall feeling poorly today: "My stomach hurts a lot"
- Rx: MOM 2oz PO a.c. & p.c.
- Rx: Prevacid 24mg PO daily
- f/u appointment next Tues.
- Abdomen shows guarding on palpation
- daughter is with pt today
- Upper GI endoscopy performed last week.
- Lipid panel results: Chol 240, HDL 40, LDL 25   Trig 230, eGFR 60, HgB A1C 7.8%
                          Auscultated BS normal in RUQ & LUQ x 2

S:
O:
A:
P:

Using the sample insurance card below identify the four most critical elements to include in the electronic medical record. If this information is not entered correctly, how this can delay payment and result in a denied insurance claim?
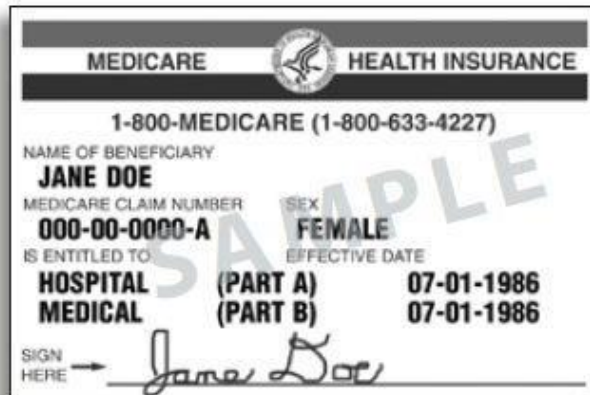
NURSE AIDE

Through the Nurse Aide program, students learn to assist patients with daily living duties, such as feeding, bathing and grooming, as well as perform basic medical procedures, like take vital signs and dress IVs. Students also participate in a clinical experience. This experience includes a mandatory number of both classroom and clinical training hours. Students are required to complete a criminal background test and undergo drug testing.

Recommended Skills to Possess:
- Will be in direct contact with acutely and chronically ill residents thus student must be respectful and courteous at all times.
- MUST be able to maintain confidentiality and honesty.
- Substantial verbal and written communication skills.
- Basic Medical Math: to include addition, multiplication, ratios, fractions, height/ weight, temperature measurements, food intake/ beverage intake percentages/ ratios.
- Be able to work under pressure and under stressful situations in a medical emergency environment.
- Physically able to stand/ walk for long periods of time, lift up to 100 pounds and have good dexterity.

Recommended Coursework and Experience with:
- Basic anatomy and physiology
- Charting/ graphing skills

Supplies and Fees Needed for Course:
- Approximately $142 (includes state and national criminal background check, urine screen, BLS for Health Care Providers, HOSA membership)
- Scrubs, particular color to be determined by instructor at course beginning
- White or black athletic shoes

Credential/Certification Opportunities:
- AHA Basic Life Support
- Virginia Board of Nursing State Certification Exam for Certified Nurse Aide

SAMPLE NURSE AIDE MATERIAL

Which of the following is MOST important for the prevention of skin breakdown in the client?
   A. Air-drying the client's skin
   B. Rubbing lotion on the client's skin
   C. Ambulating the client once a day
   D. Repositioning the client every 2 hours

When giving a client a bed bath, it is important for the nurse aide to:
   A. Cleanse the eyes by wiping from the inner to the outer corners of the eyes
   B. Ensure that the water temperature is 140° F (60°C)
   C. Uncover the whole body so that the linens do not get wet
   D. Wash and dry the skin vigorously

The nurse aide is taking a client's vital signs. What should the nurse aide do if a client's pulse oximetry is 95%?
   A. Provide oxygen to the client
   B. Record the finding in the client's chart
   C. Move the pulse oximetry sensor to another location
   D. Report the finding to the nurse immediately

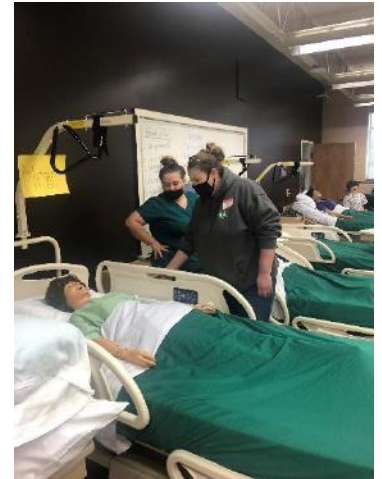List the five vital signs that are regularly monitored
   1.
   2.
   3.
   4.
   5.

What is the normal pulse rate for adults?
   A. 40 to 90 beats per minute
   B. 60 to 100 beats per minute
   C. 25 to 50 beats per minute
   D. 80 to 120 beats per minute

What color is a rectal thermometer?
   A. Blue
   B. Green
   C. Red
   D. White

EMT/FIREFIGHTING I

The tasks for the EMT course in the first year represent the National and Virginia Emergency Medical Services (EMS) Educational Standards. Students explore and apply the fundamentals of EMS, anatomy, physiology, and medical terminology while demonstrating skills in assessing and managing patient care, including assessing the scene and understanding shock, resuscitation, and trauma.

In the second year, Firefighting I requires discipline and attention to academic and professional standards to successfully fight live fires, address hazardous-materials (HAZMAT) incidents, and conduct search-and rescue operations. Students will become familiar with the procedures, equipment, and technologies used by fire departments. This course challenges students academically, mentally, and physically and meets the standards of National Fire Protection Association (NFPA) 1001-2013 leading to the opportunity to obtain a Firefighter I certification.

Although not a prerequisite, students are strongly encouraged to complete Introduction to Health and Medical Science before taking EMT/Firefighting I. Only seniors can complete EMT/Firefighting I.

Recommended Skills to Possess:
- MUST be able to maintain confidentiality and honesty.
- Effective workplace skills.
- Substantial verbal and written communication skills
- Basic Medical Math: to include addition, multiplication, ratios, fractions, height/ weight, temperature measurements, food intake/ beverage intake percentages/ ratios.
- Be able to work effectively with people of all age levels.
- Be able to work under pressure and under stressful situations in a busy office/ medical emergency environment.
- Physically able to stand/ walk for long periods of time, lift up to 50 pounds and have good dexterity.

Recommended Coursework and Experience with:
- Basic anatomy and physiology
- Algebra 1
- Charting/ graphing skills

Fees Needed for Course:
- NA

Credential/Certification Opportunities:
- EMT Basic
- Firefighter I

SAMPLE EMT/Firefighting I Material

EMT:

1. The spleen is a highly vascular organ that lies in the _____ quadrant?
   - A.   Right upper
   - B.   Left lower
   - C.   Left upper
   - D.   Right lower

2. Signs of adequate ventilation in the adult include:
   - A.   Pink mucous membranes
   - B.   A prolonged exhalation phase
   - C.   A shallow depth of breathing
   - D.   Respirations of 30 breaths/min

Firefighter:

1. Life safety, incident stabilization, and _____ are the three most important organizational duties for fire departments to pursue.
   - A.   Building inspections
   - B.   Public information
   - C.   Property conservation
   - D.   Resource management

2. A flat head axe is more suitable for _____, while a pick head axe is more adaptable to a variety of firefighting functions?
   - A.   Striking
   - B.   Prying
   - C.   Heavy work
   - D.   Chopping

HOSPITALITY AND TOURISM

Culinary
Arts

OVERVIEW
Hospitality & Tourism encompasses the management, marketing and operations of restaurants and other food services, lodging, attractions, recreation events and travel related services. Careers can be found all over the world and range anywhere from hotel and restaurant operations to working in amusement parks and other tourist destinations. Excellent customer service skills are essential for everyone in this field.

Based on population growth and as people's incomes increase, there should be a greater need for chefs and head cooks. It is becoming more common for consumers to demand healthier food at restaurants, cafeterias, and grocery stores, so experienced chefs will be needed to help prepare meals. The need for food service managers is expected to increase because people will continue to eat out during this time period, so managers will be needed to supervise food establishments.

EMPLOYMENT PROJECTIONS
The Hospitality & Tourism cluster, which employed approximately 486,200 Virginians in 2016, is expected to employ about 58,400 more in 2026, for a total of 544,600. This represents about 10 percent growth over the decade, which exceeds the anticipated 9 percent average growth nationally among all occupations in this cluster. This cluster is also expected to have over 88,000 job openings within the commonwealth annually, which is the highest number of all clusters.
(http://www.doe.virginia.gov/instruction/career_technical/statistics_reports/career_clusters_snapshots/hosp.pdf)

Selected Occupation	2020 Median Wage	Predominant Education Level
Cooks, Restaurant	$28,800	High School, Training/certification & work experience
Food Service Supervisors	$34,570	High School & work experience
Chefs and Head Cooks	$53,380	High School & Work experience
Food Service Managers	$56,590	High School & Work experience
Bakers	$29,400	High School & Training/certification
Concierges	$32,380	High School & Training/certification

CULINARY ARTS

The Culinary Arts program is a carefully designed curriculum intended to teach students the fundamentals of cooking and to prepare them for a rewarding career in the food service industry. Through the two-year curriculum, the students are taught culinary principles covering the how and why of cooking, the proper use of restaurant equipment, quality standards and sanitation procedures. The intent of the course is to prepare the student to immediately seek employment in the food service industry or continue training in the culinary industry through higher education. Students focus on ensuring sanitation and safety standards and have the opportunity to become ServSafe Certified through the National Restaurant Association.

Recommended Skills to Possess:
- Ability to lift objects weighing up to 50 pounds.
- Be able to read and follow directions.
- Be task driven.
- Understand sanitation work habits and exhibit the behavior is absolutely required.
- Demonstrate time management and organizational skills.
- Be able to work well with a wide variety of people.
- Be able to accept constructive criticism.

Recommended Coursework and Experience with:
- Basic math operations
- Measurements to include reading a ruler down to the 1/16"
- Understanding scales
- Fractions
- Metric and fluid measurement
- Measurement and conversions (halving and doubling amounts)

Supplies and/or Fees Needed for Course:
- Black close toed shoes
- Chef Uniform (black pants, white chef coat, skull cap) purchased through program approximately $70
- Black or White T-shirt
- Writing utensils and small pocket notebook

Credential/Certification Opportunities:
- ServSafe Food Manager

SAMPLE CULINARY ARTS MATERIAL

1. What are the dimensions of a batonette, julienne and brunoise cut?
a. 1/8" x 1/8" x 2"; 1/4" x 1/4" x 1/4"; 1/2" x 1/2" x 2"
b. 1/4" x 1/4" x 2"; 1/8" x 1/8" x 2"; 1/8" x 1/8" x 1/8"
c. 1/2" x 1/2" x 1/2"; 1/4" x 1/4" x 1/4"; 1/8" x 1/8" x 2"

2. Mirepoix consists of what three ingredients?
a. carrots, celery and onion
b. garlic, onion and peppers
c. salt, pepper and garlic

3. Always carry a knife _____.
a. out in front and pointed down
b. by your side and pointed up
c. by your side and pointed down

4. What chef is the father of French Cuisine in America?
a. Gordon Ramsay
b. Cesar Ritz
c. Auguste Escoffier

5. The temperature danger zone range is
a. 70-135 degrees
b. 41-135 degrees
c. 40-125 degrees

HUMAN SERVICES

| Cosmetology | Early Childhood Education |

OVERVIEW

The Human Services cluster uses your skills in communication and problem solving to provide support to families and individuals with services from working in early childhood care to providing mental health services for older adults. This diverse Career Cluster allows you to work in a variety of settings including health care, spas, schools, and community centers.

EMPLOYMENT PROJECTIONS

The Human Services cluster is projected to exhibit the highest percentage of growth between 2016 and 2026 among all clusters in both the U.S. (19 percent) and Virginia (27 percent). This cluster employed approximately 186,900 Virginians in 2016 and is expected to employ about 50,800 additional workers in the Commonwealth by 2026, for a total of over 237,700.

(http://www.doe.virginia.gov/instruction/career_technical/statistics_reports/career_clusters_snapshots/humansvcs.pdf)

Selected Occupation	2020 Median Wage	Predominant Education Level
Childcare Workers	$25,460	High School
Hairstylists	$27,630	High School and training/certification
Child, Family, and School Social Workers	$51, 760	Bachelor's or more
Massage Therapists	$43,620	Some college/Associate Degree
Marriage and Family Therapists	$51, 340	Bachelor's or more & Training/certification
Skincare Specialists	$36,510	Postsecondary nondegree award
Teacher assistants	$28,900	Associate's degree
Preschool teachers, except special education	$31,930	Associate's degree
Elementary school teachers, except special education	$60,660	Bachelor's degree, certification

COSMETOLOGY

Students study hair, skin and nails and their related care. Students are grounded in theory as they prepare to practice procedures in a clinical lab setting or classroom, using manikins for manipulative skill practice. The first year course emphasizes personal safety, professionalism, sanitation and disinfection of equipment and facilities. Students develop skills in shampooing and conditioning hair, as well as styling and cutting hair. They are introduced to chemical texture services and develop skills in manicure and pedicure procedures. In the second year, students are provided advance study of the experiences received during the first year with further emphasis on development, perfection and speed of various hairstyling application skills. Students are expected to perform services for clients in the cosmetology lab under supervision of the instructor as well as other assigned tasks.

Recommended Skills to Possess:
- Possess excellent study habits, be motivated, and have a good work ethic.
- Possess excellent manual dexterity, hand eye coordination and be able to recognize differences in color.
- Be able to stand for long periods of time and be able to tolerate chemical solutions.
- Enjoy working with the public and be willing and able to follow instructions.

Recommended Coursework and Experience with:
- Basic math operation
- Measurement to include fractions and ratios
- Money
- Chemistry
- Vocabulary (definitions and memorization)

Supplies and/or Fees Needed for Course:
- First Year Supply Kit approximately $210
- Second Year Supply Kit approximately $102

Credential/Certification Opportunities:
- Virginia Board of Cosmetology License

SAMPLE COSMETOLOGY MATERIALS

Which portion of the hair is chemical wave solution absorbed faster?
- A. At the crown
- B. At the scalp
- C. Where hair porosity is greatest
- D. Where hair density is greatest

If the cuticle is slightly raised and accepts color products easily, the hair is
- A. Normal
- B. Resistant
- C. Fine
- D. Coarse

To add strength and body to damaged hair, it is advisable to give a
- A. Massage treatment
- B. Hair analysis
- C. Permanent wave
- D. Conditioning treatment

Name the five main structures of the hair root:
1.
2.
3.
4.
5.

Which layer of the hair is sometimes absent: _____

Which determines the texture of the hair?
- A. Porosity
- B. Elasticity
- C. Diameter
- D. Density

A client with which of the following nail conditions should be referred to a physician?
- A. Blue nails
- B. White spots
- C. Onychophagy
- D. Onychomycosis

Describe a hair follicle_____

EARLY CHILDHOOD EDUCATION

Students prepare to be primary providers of home, family, or institution-based child care services by focusing on the planning, organizing, and conducting of meaningful play and learning activities; child monitoring and supervision; record keeping; and referral procedures. Critical thinking, practical problem solving and entrepreneurship opportunities within the field of early childhood education are emphasized. Practical experiences (on-site preschool) under the supervision of the instructor is required. Students also prepare for continuing education leading to careers in early childhood fields (e.g., medical, social services, and education). Work-based learning methods of instruction are encouraged for this course. Students combine classroom instruction and supervised on-the-job training in an approved position with continuing supervision throughout the school year.

Recommended Skills to Possess:
- Be able to problem-solve, think critically, and multi-task.
- Be able to interact with and speak with the public.
- Possess creativity skills to engage children in lessons.
- Possess a strong work ethic.

Recommended Coursework and Experience with:
- Vocabulary
- Reading comprehension
- Strong writing skills
- Public speaking skills

Fees Needed for Course:
- Uniform/T-shirt cost of $11
- CPR & First Aid $5

Credential/Certification Opportunities:
- AHA Lifesavers First Aid/CPR/AED
- Parapro

SAMPLE EARLY CHILDHOOD EDUCATION MATERIAL

Lesson Plan Rubric: Expectation is that students will complete a similar rubric for the daily lessons in the preschool setting. Students will be interacting and planning developmentally appropriate activities for preschool students throughout the year.

Each day should have the following:
- o Theme:
  - ▪ Letter of the week:
  - ▪ Shape of the week:
  - ▪ Color of the week:
  - ▪ Number of the week:

- o Objective:

- o Essential Questions:

- o Vocabulary terms used this week:

- o Agenda: This is the bulk of your lesson plan. In your agenda is where you will have your activities and schedule. In your schedule you must include clear backup plans. I would even advise creating backups to your backups so you are over prepared. Your agenda should paint a clear picture of a detailed format of how your day should go. For each day of preschool you need to plan ahead in order to be prepared to teach each of the following areas: math, science, cooking, writing, craft, and morning meeting activities.

- o Closure:

- o Assessment:

- o Materials needed for your lesson:

- o Differentiation:

- o Inclusion:

- o Multicultural education:

- o Reflection of your week:

INFORMATION TECHNOLOGY

Networking   Cybersecurity

OVERVIEW

The Information Technology cluster uses your love of technology to learn how to design, develop and manage different types of software and hardware programs. Though this field requires a solid foundation in math and science as well as strong technical skills, there are careers in information technology in virtually every part of the economy.

Employment of computer and information research scientists is expected to increase. The demand for new and better technology will continue to grow, which will increase the employment of such workers. These professionals also will be needed to combat cyber-attacks, which are posing a larger threat to society. There should be a greater need for database administrators in the next decade. As companies store more data, these workers will be needed to manage the data so that analysts and stakeholders can understand it. Software developers also should see good job prospects. Mobile devices and tablets are becoming more popular, so software developers are increasingly needed to develop and upgrade mobile applications. Overall, more consumer products use software, which will drive the need for developers.

EMPLOYMENT PROJECTIONS

The Information Technology cluster employed approximately 192,200 Virginians in 2016 but is expected to employ about 225,200 in 2026. This increase of about 33,000 workers represents 17 percent growth over the decade, greater than the projected national average growth of 13 percent among all occupations in this cluster.

(http://www.doe.virginia.gov/instruction/career_technical/statistics_reports/career_clusters_snapshots/infotech.pdf)

Selected Occupation	2020 Median Wage	Predominant Education Level
Network and Computer Systems Administrators	$84,810	Bachelor's or more
Computer Systems Analysts	$93,730	Bachelor's or more
Computer Support Specialists	$55, 510	Postsecondary nondegree awards/certificates
Information Security Analyst	$103,590	Bachelor's or more
Computer Hardware Engineers	$119, 560	Bachelor's or more
Computer programmers	$89,190	Bachelor's or more

NETWORKING

The Networking program prepares the student for the CCENT certification which is an entry level certification for the IT networking industry. A combination of on-line curriculum and hands-on labs are used. Students learn how networking hardware and software work together, how to create network topologies and install the networking hardware and software needed to manage both small, medium and large networks.

Students will also gain experience troubleshooting computer hardware, software and various computer peripherals including printers and laptops. Students are introduced to networking and create network cables, peer-to-peer networks, network communication and network services. Students are prepared for the Cisco CCENT (Cisco Certified Entry Network Technician) and the CompTia Network+ certification. The students will learn how to design and install networks, configure routers, configure switches, subnetting, the creation of VLANS and security on wired and wireless networks.

Recommended Skills to Possess:
- Possess excellent reading, math, and problem solving skills as students will need to read and comprehend large quantities of technical material.
- Excellent oral communication skills are needed to effectively work with colleagues and customers.
- Be able to work in team environment and have the initiative to work without direct supervision.
- Patience is an asset because some computer/network malfunctions occur intermittently determining the cause is often difficult to pinpoint.
- A basic level of computer hardware, software, and peripherals knowledge would be a benefit to a networking student.

Recommended Coursework and Experience with:
- Basic math operations
- Measurements to include reading a ruler down to the 1/16"
- Fractions
- Geometry
- Estimating
- Physical science
- Vocabulary (definitions and memorization)
- Reading comprehension

Supplies and/or Fees Needed for Course:
- N/A

Credential/Certification Opportunities:
- CCNA Academy EOC Examination: CISCO Systems
- CISCO Certified Entry Network Technician
- NOCTI Computer Networking Fundamentals

SAMPLE NETWORKING MATERIAL

What is the protocol data unit that is associated with the data link layer of the OSI reference model?
A) data   B) frame   C) packet   D) bits

Clock speed is measured in _____.
A) megahertz   B) kilobytes   C) bits   D) hard drive capacity

When must a router serial interface be configured with the clock rate command?
A) when the interface is functioning as a DTE device
B) when the interface timers have been cleared
C) when the connected DTE device is shut down
D) when the interface is functioning as a DCE device

Select three IPv4 addresses that represent subnet broadcast addresses:
A) 192.168.4.63/26   B) 192.168.4.129/26   C) 192.168.4.191.26   D)192.168.4.51/27
E) 192.168.4.95/27   F) 192.168.4.221/27

How many host addresses may be assigned when using the 128.107.0.0 network address with a subnet mask of 255.255.248.0?
A) 30   B) 256   C)2046   D) 2048   E) 4094   F) 4096

Which location of router memory is cleared with the erase startup-config command?
A) flash   B) RAM   C) ROM   D) NVRAM

Which statement is true about the TTL value of an IPv4 packet?
A) it determines the priority of a packet
B) it specifies the remaining "Life" of the packet
C) it indicates that the packet has been fragmented
D) it denotes the data payload type that the packet is carrying

A routing issue has occurred in your internetwork. Which of the following type of devices should be examined to isolate this error?
A) access point   B) host   C) hub   D) router   E) switch

Which password would allow a user to establish a Telnet session with a Cisco device?
A) VTY password   B) enable password   C) console password   D) enable secret password

CYBERSECURITY

Cybersecurity affects every individual, organization, and the nation. This program offers an excellent introduction into the world of cybersecurity. Knowledge from this course gives the student an advantage when continuing their education into data security at the community college, four-year university or military level. The class begins by defining cybersecurity with the understanding that securing data goes far beyond securing computer networks. Physically securing private information is equally important as securing data digitally. Students will use Project Based Learning methods to investigate social engineering methods and realize that the weakest link to data is the employee.

This course will offer students a basic knowledge in the field of computer networking and methods to secure data on a network. Students will learn simple programming using the BasicStamp v2 language as they program "Boebots" to behave in a prescribed manner. Malware, encryption, and offensive/defensive security software are topics the student will research in depth to further their understanding of basic cyber security practices. Students will also receive an introduction in the use of virtual machines on a virtual network using the Virginia Cyber Range.

Recommended Skills to Possess:
- Possess excellent reading, math, and problem solving skills as students will need to read and comprehend large quantities of technical material.
- Excellent oral communication skills are needed to effectively work with colleagues and customers.
- Be able to work in a team environment and have the initiative to work without direct supervision.
- Patience is an asset because some computer/network malfunctions occur intermittently, thus determining the cause is often difficult to pinpoint.
- A basic level of computer hardware, software, and peripherals knowledge would be a benefit to a networking student.

Recommended Coursework and Experience with:
- Fractions
- Geometry
- Basic coding knowledge
- Statistics
- Physical science
- Reading comprehension
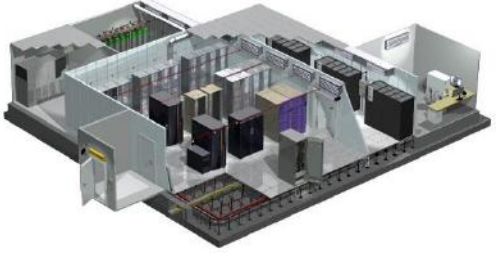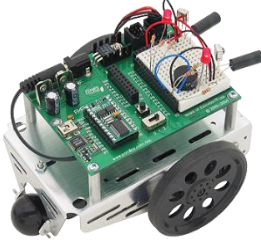
Supplies and/or Fees Needed for Course:
- N/A

Credential/Certification Opportunities:
- Workplace Readiness Skills

SAMPLE CYBERSECURITY MATERIAL

This is a completely project based learning course. Thus the following are examples of the types of projects a student might be asked to complete during the course of the program.

Social engineering project designed to teach others about password security center	Design the physical security of a data
Robot programming challenge	Encryption/decryption challenge

LAW, PUBLIC SAFETY, CORRECTIONS, AND SECURITY

Criminal Justice

OVERVIEW

The Law, Public Safety, Corrections and Security Career Cluster prepares you for service in public safety and security. Responsibilities include prevention of and protection from harm such as crime or natural disasters. Career opportunities range from public safety officers to legal services to homeland security. Positions in state and federal agencies will be more competitive, requiring people in this field to earn some type of college degree or gain military experience.

EMPLOYMENT PROJECTIONS

The Law, Public Safety, Corrections & Security cluster is projected to expand by 7 percent between 2016 and 2026. This exceeds the 5 percent expected average growth nationally among all occupations in this cluster. This cluster employed over 142,500 workers in the commonwealth. By 2026, that number is projected to be slightly more than 152,600, which represents an increase of nearly 10,100 workers during the decade.

(http://www.doe.virginia.gov/instruction/career_technical/statistics_reports/career_clusters_snapshots/law.pdf)

Selected Occupation	2020 Median Wage	Predominant Education Level
Security Guards	$31,080	High School
Lawyers	$129,930	Bachelor's or more
Police and Detectives	$67,290	Some college/Associate Degree & Training/certification
Correctional Officers and Bailiffs	$47,440	Some college Associate Degree & Training/certification
Paralegals and Legal Assistants	$52, 920	Some college/Associate Degree
Firefighters	$52,500	Postsecondary nondegree award/certificate
Probation Officers	$55,690	Bachelor's or more
Animal Control Workers	$38,430	High School & Training/certification
Forensic Science Technicians	$60,590	Bachelor's or more & Training/certification
Fish and Game Wardens	$58,040	Bachelor's or more

CRIMINAL JUSTICE

The purpose of this course is to provide the student with a basic understanding of the history and structure of the criminal justice system. This course presents an overview of for students interested in pursuing a career in the criminal justice field and the various career opportunities, (both sworn and non-sworn) available at the local, state and federal levels. Students will examine aspects of policing, the investigative process, corrections, public safety and America's courts. Students will practice written and verbal communication skills and other workplace readiness skills to better prepare them for the workforce.

Students will be exposed to professionals and subject matter experts in the field and on campus and will participate in exercises designed to offer a realistic view of the contemporary issues facing law enforcement. We will study United States Supreme Court decisions and complex legal issues relevant to the Rule of Law.

Through lecture, video, out of class experiences and guest speakers, students will explore current trends in law enforcement training, officer safety and wellness, and the high demands and extraordinary sacrifices associated with public safety. Topics will include studying real life cases of violent crime, gang violence, and terrorism. This course is designed to instill the importance of leadership, honesty and integrity, responsibility, respect, and professional ethics.

Recommended Skills to Possess:
- Possess excellent communication skills.
- Ability to problem solve basic and complex situations.
- Ability to conduct research and understand and debate controversial issues and challenges facing today's law enforcement community.

Recommended Coursework and Experience with:
- Basic physical science
- Vocabulary (definitions and memorization)
- Report writing
- Reading comprehension
- Basic computer skills
- Research

Fees Needed for Course:
- $10 for Criminal Justice T-shirt
- $20 for Police Memorial and Museum

Credential/Certification Opportunities:
- NOCTI Criminal Justice

SAMPLE CRIMINAL JUSTICE MATERIAL

1. Which group is considered the backbone of police services?
    a. Detectives
    b. patrol
    c. training
    d. community service officers

2. The number of officers or subordinates that a supervisor can supervise effectively is known as the span of control
    a. True
    b. False

3. Which of the following is called a special jurisdiction agency?
    a. Port Authority Police
    b. College Police
    c. Parks and Wildlife Police
    d. All of the above

4. A reserve officer is not considered to be sworn personnel.
    a. True
    b. False

5. The leadership team is an independent body with authority to make binding decisions on a wide-range of policy issues, working conditions, and departmental strategies.
    a. True
    b. False

6. The first officer at a crime scene is in charge until relieved, at which point the investigator takes charge.
    a. True
    b. False

7. The Director of the FBI from 1924 to his death in 1972 was J. Edgar Hoover?
    a. True
    b. False

8. US Supreme Court Case, Mapp v Ohio was responsible for applying the Exclusionary Rule to all state courts in America.
    a. True
    b. False

TRANSPORTATION, DISTRIBUTION, & LOGISTICS

| Automotive Technology | Auto Body Technology |

OVERVIEW

The Transportation, Distribution and Logistics cluster uses your knowledge of mechanics, mathematics and design to work in careers you plan, manage and move everything from people to company products through a range of transportation services. In this field, you are involved in the logistics of all modes of transportation from road to rail to air to water.

As people continue to rely on automobiles, more automotive service technicians will be needed to perform maintenance on vehicles. Many employers in the automotive field have a difficult time finding qualified technicians, so applicants with training or certifications should have better job prospects. Employment of airline and commercial pilots is expected to grow.

EMPLOYMENT PROJECTIONS

The Transportation, Distribution & Logistics cluster employed approximately 273,400 Virginians in 2016 but is expected to employ about 298,000 in 2026. This increase of about 24,600 workers represents 9 percent growth over the decade, slightly greater than the projected national average growth of 7 percent among all occupations in this cluster.

Selected Occupation	2020 Median Wage	Predominant Education Level
Automotive Service Technicians and Mechanics	$44,050	High School & Training/certification
Diesel Engine Mechanics	$50,200	High School & Training/certification
Automotive Body and Related Repairers	$44, 190	High School & Training/certifications
Cleaners of Vehicles and Equipment	$27, 640	High School
Painters, Transportation	$42,280	High School & Training/certifications
Tire Repairers and Changers	$30, 060	High School & Training/certification
Transportation and Distribution Managers	$96, 390	High School & Work experience
Mobile Heavy Equipment Mechanics	$55,350	High School & Training/certification

AUTOMOTIVE TECHNOLOGY

In the Automotive Technology program, the student will have the opportunity to develop skills operating state-of-the-art test equipment such as: engine computer diagnostic analyzers, trouble code scanner testers, computer four-wheel alignment, computer wheel balancing, brake lathes, and more.

Using the above equipment, the following job skills will be developed: engine diagnosis and tune-up, engine rebuilding, brake service, safety inspections, automatic transmissions, transaxles, standard transmissions, tires, suspension, and computer four-wheel alignment. In all, mechanical failure--bumper to bumper--can be covered. Twenty-five percent of the time is spent in book study, viewing videos, demonstrations, lectures, and VICA PDP (Vocational Industrial Clubs of America Professional Development Program.) Seventy-five percent of the class consists of hands-on lab experience.

Recommended Skills to Possess:
- Effective high school level math, reading, and communication skills.
- Ability to articulate and convey thoughts accurately.
- Act in a professional and safe manner.
- Work well with others and individually.
- Ability to use technology and computers.
- Good hand/eye coordination.

Recommended Coursework and Experience with:
- Basic math operations
- Decimals to the thousandths place
- Fractions
- Metric measurement
- Fluid measurement

Supplies Needed for Course:
- Safety glasses
- Coveralls (optional)/clothing that can get dirty
- Closed toe shoes

Credential/Certification Opportunities:
- ASE Certification
- State Inspection Certification

SAMPLE AUTOMOTIVE TECHNOLOGY MATERIAL

The ride (curb) height on the rear of a vehicle is found to be too low. The best corrective action would be to:
A. replace the rear shocks.
B. install larger diameter rear tires.
C. replace the rear springs.
D. add helper springs

The role of a stabilizer (sway) bar is to:
A. prevent vibration.
B. control body roll.
C. prevent tire wear.
D. absorb noise.

A vehicle with front disc brakes shudders when the brakes are applied. Which of these could be the cause?
A. Worn disc pads
B. A leaking grease seal
C. Warped brake rotors
D. A tight wheel bearing

How many amps will flow through a circuit with 3.3 ohms of resistance if 14.0 volts are applied?
A. 0.23 amps
B. 4.24 amps
C. 14.0 amps
D. 46.2 amps

The digital multimeter (DMM) shown in Diagram A is measuring:
A. volts.
B. amps.
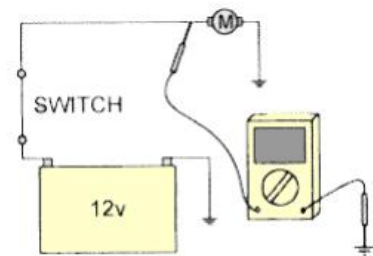C. ohms.
D. watts

SWITCH

12v

Diagram A

An air conditioning system is being charged. Technician A says that R-12 and R-134a can be mixed in a vehicle's system. Technician B says that it is acceptable to release R-134a into the atmosphere. Who is right?
A. A only
B. Both A and B
C. B only
D. Neither A nor B

AUTO BODY TECHNOLOGY

In the global automotive repair industry, there is a growing demand for qualified auto body technicians. In this course, students are taught non-structural analysis, damage repair, and welding. Students work with a variety of materials, using metal finishing and body filling techniques to prepare surfaces and repair panels. Additionally, students are taught MIG welding/cutting, metal repair, corrosion protection, masking, refinishing, and unibody inspection. Students will practice shop safety and gain career skills.

Recommended Skills to Possess:
- Possess the ability to be an active learner through understanding the implications of new information for both current and future problems.
- Ability to determine the kind of tools and equipment needed to do a job.
- Ability to understand written sentences and paragraphs in work related documents.
- Be service oriented; actively looking for ways to help people.
- Be able to consider the relative costs and benefits of potential actions to choose the most appropriate one.
- Use logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.
- Be able to identify complex problems and review related information to develop and evaluate options and implement solutions.

Recommended Coursework and Experience with:
- Basic math operations
- Decimals to the thousandths place
- Fractions
- Metric and fluid measurement
- Estimating

Supplies and/or Fees Needed for Course:
- Safety glasses
- Closed toe shoes
- Coveralls (optional)/clothing that can get dirty

Credential/Certification Opportunities:
- I-CAR Certification
- I-CAR Welding Certification

SAMPLE AUTO BODY TECHNOLOGY MATERIAL

Which of these may be helpful when applying body filler to a featured line?
A. Level
B. Ruler
C. Masking tape
D. Masking paper

Which of these tools can be used for spring hammering?
A. Induction heater
B. Stud gun
C. Pick
D. Spoon

The term 'oil can' effect relates to?
A. Finish defects caused by petroleum-based cleaning products
B. Steel having plastic deformation characteristics
C. Improperly cured body filler
D. Stretched metal

Which of these has the lowest risk for cutting holes in the steel when identifying high and low spots during the straightening process?
A. Sanding block and sand paper
B. Belt sander
C. Vixen file
D. Course file

The face of a cold shrinking hammer is flat
A. True
B. False