## ROANOKE TECHNICAL EDUCATION CENTER (ROTEC)

ROTEC is the Center for Career and Technical Education (CTE) that offers courses to prepare students with knowledge and skills for employment and for further education. Students from PH, WF, NCTLA and FPA may attend classes at ROTEC with transportation provided. Programs have working arrangements with employers in the Roanoke Valley such as Roanoke Fire/EMS, Virginia Western Community College, and Carilion Clinic.

Students can enter the work force directly upon graduation or continue with postsecondary education at a college or technical school. Students in designated ROTEC classes can earn dual enrollment college credits while in high school. Internships, in cooperation with local businesses, are available in certain programs for students who qualify.

“Hands-on” learning projects that incorporate Virginia’s Workforce Readiness Skills are included in all classes. All students will have contact with employers throughout the Roanoke Valley and will be able to participate in contests and leadership activities related to their course of study. Students will be strongly encouraged to participate in CTE student co-curricular organizations (DECA, FBLA, HOSA, FCCLA, Skills USA, TSA). There are minimal fees that apply to joining any student organization.

ROTEC courses that are offered as a double block class will be awarded 2 credits. Single block classes will earn 1 credit. Course contact hour requirements vary from program to program.

Students are encouraged to explore programs in grade 9 and/or 10, and then select a ROTEC major program area of study for grades 11 and 12 so they can earn the Career and Technical Education diploma seal and/or an industry certification at graduation. Successfully completing two years in a program area will meet the graduation requirements for the sequential elective. Students earning a standard diploma **MUST** pass a state approved industry certification or work-based learning experience to graduate. All ROTEC courses offer these end of year certifications to students at no charge including course R6120 Economics and Personal Finance, a course all students are required to take and pass. Additional Virginia State approved Industry Certifications could be added throughout the year.

ROTEC is committed to the Virginia Department of Education initiative for the Path to Industry Certification: High School Industry Credentialing program. **Due to the academic rigor and Industry Certification requirements, it is strongly recommended that students enrolling in these classes have a “C” average.** Students must also adhere to strict behavioral

guidelines due to safety regulations and requirements in many of the classes. Students that do not meet these requirements may see the ROTEC Principal or School Counselor for possible consideration. Students who earn a state approved credential by passing a certification or licensure examination may earn up to two student-selected verified credits to meet graduation requirements. In addition to providing the opportunity to earn student-selected verified credits, this initiative provides the following benefits:

* Added value to a transcript for higher education purposes or obtaining an entry-level position in the technical job market.
* Evidence that the student has completed advanced educational preparation and verification of CTE business and industry competencies and workplace readiness skills (WRS).
* Increased job opportunities for advancement in a chosen career path.
* Enhanced self-esteem for students through achieving national occupational standards recognized by business and industry.

#### ARCHITECTURE and CONSTRUCTION CAREER CLUSTER

###### R8601

**Carpentry I** (2 Credits) Grades 10, 11, 12

Carpentry I is foundational for achieving high-level construction industry skills that can result in an exciting and lucrative career. With an emphasis on safety, students are taught to use hand and power tools, cut stock, apply construction mathematics, interpret blueprints, and understand basic rigging. Students will become proficient in identifying types of residential construction components to frame walls, floors, ceilings, roofs, doors, and windows. All students will obtain the required Construction Industry OSHA 10 safety credential. **NOCTI and Workplace Readiness are offered as approved Industry Certifications.**

###### R8602

**Carpentry II** (2 Credits) Prerequisite: R8601 Grades 11, 12

Carpentry II prepares students for successful transition into postsecondary education for careers in carpentry and related fields, such as construction management, architecture, and others. Students are taught the safe use of hand and power tools common to the industry to complement their Construction Industry OSHA 10 safety credential earned in Carpentry I. Students will become proficient in assembling and installing various types of residential construction components according to industry standards, including forming foundations, framing floors,

walls, ceiling, roofs, trusses, roofing materials, stairs, and exterior doors and windows. **NOCTI and Workplace Readiness are offered as approved Industry Certifications.**

###### R8603

**Carpentry III** (2 Credits)

Prerequisite: R8602 with “C” or higher

Grade 12

Carpentry III is an advanced course that allows students to gain in-depth knowledge and hands on experience in construction skills. Students explore specialized areas in carpentry, such as building decks and porches, alternative framing, interior finishes, drywall installation and finishing, as well as energy efficiency and green technology.

Exploration of licensure requirements and entrepreneurial opportunities are emphasized. **NOCTI and Workplace Readiness are offered as approved Industry Certifications.**

**R8503**

**HVAC - Heating, Ventilation, Air Conditioning, & Refrigeration I** (1 credit)

Grades 10, 11

In this introductory course, student are taught to professionally install, repair, and maintain the operating conditions of heating, ventilation, air-conditioning, and refrigeration (HVACR) systems. Students work with piping and tubing, student the principles of heat and electricity, install duct systems, and comply with U.S. Environmental Protection Agency (EPA) regulations. Successful completion of the two – course sequence may prepare students for a career as an HVACR technician.

**R8504**

**HVAC - Heating, Ventilation, Air Conditioning, & Refrigeration** (2 credits)

Prerequisite: R---

Grades 11, 12

In this continuing course students are taught to professionally install, repair, and maintain the operating conditions of heating and cooling systems. Students also explore emerging technologies, Environmental Protection Agency (EPA) regulations, energy conservation techniques, and systems with exempt and non-exempt refrigerants. Completion of this sequence will prepare students for employment in a variety of heating, ventilation, air-conditioning, and refrigeration (HVACR) occupations.

### AGRICULTURE, FOOD AND NATURAL RESOURCES

### R8036

### Landscaping I (1credit)

### Grades 10,11

### In this course, students are prepared for entry-level employment, postsecondary opportunities, and advancement in the landscape design, construction, and maintenance industries. High-quality work-based learning will provide experiential learning opportunities related to students’ career goals and/or interests, integrated with instruction, and performed in partnership with local businesses and organizations.

### R8039

### Landscaping II (1 credit)

### Prerequisite: R8036

### Grades 11,12

### In this course, students are prepared for entry-level employment in the landscaping industry through hands-on experiences, to include landscape design, installation, and maintenance, incorporating technology, plant, and soil science, and utilizing landscaping tools, equipment, and machinery. High-quality work-based learning will provide experiential learning opportunities related to students’ career goals and/or interests, integrated with instruction, and performed in partnership with local businesses and organizations.

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### AUTOMOTIVE TECHONOLOGY CAREER CLUSTER

###### R8506

**Automotive Technology I** (2 credits) Grades 10, 11, 12

In this course, students explore, handle, and perform basic functions in engine repair, automatic transmission and transaxle, manual drive train and axles, suspension and steering systems, and brakes. Students who successfully complete the Automotive Technology program may be eligible to take the Automotive Service Excellence (ASE) Student Certification examination. The ASE Student Certification is the first step in building a career as a service professional in the automotive industry. Automotive Technology I and II are closely aligned with the 2017 ASE Education Foundation automobile program standards for Maintenance and Light Repair (MLR). **ASE and Workplace Readiness are offered as approved Industry Certifications.**

###### R8507

**Automotive Technology II** (2 credits) Prerequisite: R8506

Grades 11, 12

In this course, students build upon their basic knowledge of automotive technology, exploring more advanced tasks in engine repair, automatic transmission and transaxle, manual drive train and axles, suspension and steering systems, and brakes. They also learn about electrical, electronic, and HVAC systems in automobiles. Upon successful completion of the course, students may be eligible to take the Automotive Service Excellence (ASE) Student Certification examination. Automotive Technology I and II are closely aligned with the 2017 ASE Education Foundation automobile program standards for Maintenance and Light Repair (MLR). **ASE and Workplace Readiness are offered as approved Industry Certifications Students must meet Virginia Placement Test (VPT) requirements to determine eligibility for Dual Enrollment options.**

###### R8508

**Automotive Technology III** (2 credits) Prerequisite: R8507 (with a “C” or higher) Grade 12

This course prepares students to perform automotive diagnosis and repairs in the following areas: engine repair, cooling systems, transmission and transaxle, manual drive trains and axles, suspension and steering, wheel and tire, brakes, electrical/electronic systems, HVAC, and engine performance. Students are provided with more advanced instruction in all systems as they prepare for the Automotive Service Excellence (ASE) certification examinations. The Automotive Technology program provides the fundamental skills necessary to succeed in an ever-changing and challenging industry as an automotive technician. This course is closely aligned with the ASE Education Foundation (formerly NATEF)’s 2017 standard for Automobile Service Technology (AST). **ASE and Workplace Readiness are offered as approved Industry Certifications Students must meet Virginia Placement Test (VPT) requirements to determine eligibility for Dual Enrollment options.**

#### BUSINESS EDUCATION and INFORMATION TECHNOLOGY CAREER CLUSTER

###### R6120

**Economics and Personal Finance** (1 credit) Grades 10, 11, 12

Students learn how economies and markets operate and how the United States economy is interconnected with the global economy. Additionally, they learn how to navigate the financial decisions they must face and to make informed decisions relating to career exploration, budgeting, banking, credit, insurance, spending, financing postsecondary education, taxes, saving and investing, buying/leasing a vehicle, and living independently. They also learn the importance of investing in themselves in order to gain the knowledge and skills valued in the marketplace.

Development of financial literacy skills and an understanding of economic principles will provide the basis for responsible citizenship, more effective participation in the workforce, and career success. The course incorporates all economics and financial literacy objectives included in the Code of Virginia §22.1-200-03B. **This course is required for graduation and students are required to take the W!SE Financial Literacy and/or Workplace Readiness Certification exam to meet the latest graduation requirements. Students must meet Virginia Placement Test (VPT) requirements to determine eligibility for Dual Enrollment options**

**R6611**

**Digital Applications** (1 Credit) Grades 9, 10, 11, 12

This course is designed for secondary school students to develop real-life, outcome-driven approach skills for digital citizenship, basic computer operations, keyboarding, application software (word processing, spreadsheets, multimedia applications, databases), and career exploration. This course promotes skills that can be applied across the curriculum and offers preparation relevant to 21st century skills and postsecondary education. Students who successfully complete this course may be eligible for a rigorous and relevant industry certification examination.

Student skills may be enhanced by participation in work- based learning activities and/or the Future Business Leaders of America (FBLA). **Microsoft Office Academy and Workplace Readiness are offered as approved Industry Certifications. Students must meet Virginia Placement Test (VPT) requirements to determine eligibility for Dual Enrollment options.**

###### R6612

**Computer Information Systems** (1 Credit) Prerequisite: R6611

Grades 10, 11, 12

Students apply problem-solving skills to real-life situations through word processing, spreadsheets, databases, multimedia presentations, and integrated software activities. Students work individually and in groups to explore computer concepts, operating systems, networks, telecommunications, emerging technologies, and career opportunities related to the information technology field. **Microsoft Office Academy and Workplace Readiness are offered as approved Industry Certifications. Students must meet Virginia Placement Test (VPT) requirements to determine eligibility for Dual Enrollment options.**

###### R6115

**Principles of Business and Marketing** (1 Credit) Grades 9, 10, 11, 12

Students discover the roles of business and marketing in the free enterprise system and the global economy. Students examine basic financial concepts of banking, insurance, credit, taxation, and investments to provide a strong background for making sound decisions as consumers, wage earners, and citizens. The real-world effects of technology, effective communication, and interpersonal skills is evident throughout the course. This course also supports career development skills and explores career options. **Workplace Readiness is offered as an approved Industry Certification.**

###### R6640

**Coding and Game Design I – Programming** (1 Credit) Prerequisite: 3130 and R6611

Grades 10, 11, 12

Students in the Programming course explore programming concepts, use algorithmic procedures, implement programming procedures with one or more standard languages, and master programming fundamentals. Coding is used throughout the course. Graphical user interfaces may be used as students design and develop interactive multimedia applications, including game programs. In addition, students employ hypertext markup language (HTML) or JavaScript to create web pages. Students develop their employability skills through a variety of activities.

Students should have a strong math background (C average and above) and have successfully completed Algebra I and Digital Applications to enroll in this course. Programming and Workplace Readiness are offered as Industry Certifications.

###### R6641

Coding and Game Design – Advanced Programming (1 Credit)

Prerequisite: R6640 Grades 11, 12

Building on their foundation of programming skills, Advanced Programming students use object-oriented programming to develop database applications, interactive multimedia applications including game applications, mobile applications, and web applications. Students continue to develop their employability skills as they research pathways for continuing education and careers in the information technology industry and engage in various career-building activities. **Programming and Workplace Readiness are offered as Industry Certifications.**

###### R6302

**Cybersecurity Fundamentals** (1credit)

Prerequisite: R6611 or R6640 and 3130

Grades 10, 11, 12

Description should state that cybersecurity is the protection of information and data —which includes information systems (e.g., networks, hardware, software), the human element, and physical elements—from risks associated with threats, attacks, hazards, or physical damage. **Students should have a strong math background (C average and above) and have successfully completed Algebra I and Digital Applications to enroll in this course. Workplace Readiness as well as numerous Microsoft Industry certifications will be offered.**

###### R6304

**Cybersecurity Software Operations**

(1 Credit)

Prerequisite: R6302

Grades 11, 12

The Cybersecurity Software Operations course focuses on aspects of computer support and network administration with an emphasis on project-driven learning and cybersecurity. Students learn networking concepts, create peer-to-peer network systems and client server networks, install and configure network cards and operating systems, and create and implement security plans. **Workplace**

Readiness as well as numerous Microsoft Industry certifications will be offered.

###### R6630

**Design, Multimedia and Web Technologies** (1 Credit) Grades 9, 10, 11, 12

Students develop proficiency in designing and creating graphic design projects, multimedia presentations/projects, and websites, using industry-standard application software. Students apply principles of layout and design in completing projects. Students create portfolios that include a résumé, certifications earned, and a variety of print, multimedia, and website projects produced in the course. **Microsoft IT Academy and Workplace Readiness are offered as approved Industry Certifications. Students must meet Virginia Placement Test (VPT) requirements to determine eligibility for Dual Enrollment options.**

###### R6631

Design, Multimedia and Web Technologies Advanced

(1 Credit)

Prerequisite: R6630 Grades 11, 12

Students develop advanced skills for creating digital media projects. Students work with cutting edge hardware and software, applying skills to real-world projects. **Microsoft IT Academy and Workplace Readiness are offered as approved Industry Certifications. Students must meet Virginia Placement Test (VPT) requirements to determine eligibility for Dual Enrollment.**

### EDUCATION

All students wishing to take Virginia Teachers for Tomorrow will be required to complete an application and attend an interview with a ROTEC faculty member as well as demonstrate satisfactory progress to include academics, attendance, behavior, and workplace readiness skills.

###### R9061

Introduction to Virginia Teachers for Tomorrow (Dual Enrollment) (1 Credit)

Grades 9, 10

This exploratory course fosters student interest, understanding, and appreciation of the teaching profession and allows students an introduction to careers in education. Students are taught to develop self- awareness, collaborate and communicate with peers, build positive learning environments, and discover learning differences of others. The curriculum is

designed to help students set attainable goals in the Education and Training Career Cluster. This course introduces students to the high school Virginia Teachers for Tomorrow (VTfT) program. Additional educational leadership opportunities are offered through the student organization, Educators Rising.

Students must meet Virginia Placement Test (VPT) requirements to determine eligibility for Dual Enrollment.

###### R9062

**Virginia Teachers for Tomorrow I** (1 Credit) Grades 10, 11, 12

Virginia Teachers for Tomorrow (VTfT) fosters student interest, understanding, and appreciation of the teaching profession and allows secondary students to explore careers in education. Students build a foundation for teaching; learn the history, structure and governance of teaching; apply professional teaching techniques in the VTfT classroom and field experience; and reflect on their teaching experiences. Additional educational leadership opportunities are offered through the student organization, Educators Rising.

ParaPro and Workplace Readiness are offered as approved Industry Certifications.

###### R9072

**Virginia Teachers for Tomorrow II** (1 Credit) Prerequisite: R9062 (with “C” or higher) Grades 11, 12

Students continue to explore careers in the Education and Training Career Cluster and pathways. This course provides the opportunity for students to prepare for careers in education as they research postsecondary options, learn about the process of teacher certification in Virginia, and participate in a practicum experience. **Students must meet Virginia Placement Test (VPT) requirements to determine eligibility for Dual Enrollment options. ParaPro, Praxis Core and Workplace Readiness are offered as approved Industry Certifications.**

**LAW, PUBLIC SAFETY, CORRECTIONS AND SECURITY**

**R8702**

**Criminal Justice I** (1 credit)

Grades 10,11

In this course, students are introduced to law, public safety, corrections, and security practices. Students examine contemporary issues in the criminal justice system and explore crime scene investigation, court procedures, policing, and juvenile justice. This course provides a foundation for careers as lawyers, as forensics specialist, and as law enforcement and corrections officers.

**R8703**

**Criminal Justice II** (1 credit)

Prerequisite: R8702

Grades 11,12

In this course students apply knowledge learned in Criminal Justice I through practical scenarios involving crime scene investigation, criminal investigation, and crisis intervention. Students explore trends in correctional standards and in identifying and preventing terror threats. This course prepares students for careers as lawyers, forensics specialist, law enforcement, and corrections officers.

#### ARTS, AUDIO/VISUAL TECHNOLOGY and COMMUNICATIONS

###### R8607

**Commercial Photography I** (1 Credit) Grades 10, 11, 12

The ability to apply principles of visual literacy to produce

visual content gives students an advantage in today’s global, multimedia society. Students will be taught industry- relevant technical skills and have the opportunity to work with a variety of technology, including digital cameras, design software, and editing tools to stage, shoot, process, print, and present professional-grade commercial images.

Workplace Readiness is offered as an approved Industry Certification.

###### R8608

**Commercial Photography II** (1 credit) Prerequisite: R8607

Grades 11, 12

Students are taught industry-relevant technical skills and have the opportunity to work with a variety of technology, including digital cameras, lighting, design software, and editing tools to stage, shoot, process, print, and present professional-grade images while developing a portfolio for a career as a commercial photographer. Students will develop an understanding of photography’s influence in society and strategize how they may perform in the professional industry, using their technical and creative knowledge.

Workplace Readiness is offered as an approved Industry Certification.

###### R8489

**Entertainment Design and Technology** (1 Credit) Grades 10, 11, 12

Students will learn and apply skills in various areas related to the creative process of live production. They will have the opportunity to explore scenic design and construction, lighting design and technology, and live sound reinforcement. Students will learn techniques used by industry professionals through hands-on experiences and investigate job opportunities and careers in the dynamic and growing industry of live entertainment. **Workplace Readiness is offered as an approved Industry Certification.**

###### R8688

**Television and Media Production** (1 Credit) Grades 9, 10, 11, 12

In this course, students will engage in hands-on digital media production while using industry standard equipment and software. They will learn how to work as media producers and explore careers in the dynamic industry of digital media production. **NOCTI and Workplace Readiness are offered as approved Industry certifications.**

###### R8689

**Television and Media Production II** (2 Credits) (Prerequisite: R8688)

Grades 10, 11, 12

This course builds upon knowledge and skills from Television and Media Production I. Students will generate fiction and non-fictional media content. Students will enhance their digital media production skills by entering the studio and control room and become proficient with industry standard equipment and software. They put their knowledge of digital media production into action with use of sophisticated tools and equipment as they begin to develop their personal portfolios. **NOCTI and Workplace Readiness are offered as approved Industry certifications.**

**R8690**

**Television and Media Production III** (2 Credits) Prerequisite: R8689 (with “C” or higher) Grades 11, 12

This course builds upon knowledge and skills from Television and Media Production I and II. Students will demonstrate mastery of media production knowledge and skills. They will create original productions, assemble a professional digital portfolio, and investigate the dynamic media production industry. Students will research postsecondary opportunities and formulate strategies for both college and career success. **NOCTI and Workplace Readiness are offered as approved Industry certifications.**

#### HEALTH and MEDICAL SCIENCES CAREER CLUSTER

All students wishing to take CNA or EMT will be required to complete an application, attend an interview with an HMS faculty member, demonstrate satisfactory progress in Introduction to Health Careers or Medical Terminology to include academics, attendance, behavior, and workplace readiness skills.

###### R8302

**Introduction to Health and Medical Sciences** (1 Credit) Grades 10, 11, 12

This course introduces the student to a variety of healthcare careers and develops basic skills required in all health and medical sciences. It is designed to help students understand the key elements of the U.S. healthcare system and to learn basic healthcare terminology, anatomy and physiology for each body system, pathologies, diagnostic and clinical procedures, therapeutic interventions, and the fundamentals of traumatic and medical emergency care.

Throughout the course, instruction emphasizes safety, cleanliness, asepsis, professionalism, accountability, and efficiency within the healthcare environment. Students also begin gaining job-seeking skills for entry into the health and medical sciences field. In addition, instruction may include the basics of medical laboratory procedures, pharmacology fundamentals, biotechnology concepts, and communication skills essential for providing quality patient care. **Course fees will apply for uniforms and other items. National Health Science Assessment and Workplace Readiness are offered as approved Industry certifications. Students must meet Virginia Placement Test (VPT) requirements to determine eligibility for Dual Enrollment options.**

###### R8383

**Medical Terminology** (1 credit) Grades 10, 11, 12

Medical Terminology is designed to help students learn common medical terms essential for patient care. Topics are presented in logical order, beginning with each body

system's anatomy and physiology and progressing through pathology, laboratory tests and clinical procedures, therapeutic interventions, and pharmacology. Students learn concepts, terms, and abbreviations for each topic.

National Career Readiness and Workplace Readiness are offered as approved Industry certifications. Students must meet Virginia Placement Test (VPT) requirements to determine eligibility for Dual Enrollment options.

###### R8355 & R8356

**Nurse Aide I and II (Dual Enrollment)** (4 credits)

Grades 11, 12

Nurse Aide I, offered as an occupational preparation course beginning at the 11th-grade level, is regulated under the Virginia Board of Nursing. It emphasizes the study of nursing occupations as related to the healthcare system. Students study growth and development across the lifespan, simple body structure and function, and medical terminology. They are introduced to concepts of infection prevention and disease processes. Students receive entry-level skill training in patient nurse aide relationships; measuring and recording of vital signs; cardiopulmonary resuscitation; and general patient care. Work-based learning may be offered as part of this course. The Nurse Aide I course introduces students to careers in nursing, health professions, and STEM-H professions. Students must maintain American Heart Association's Cardiopulmonary Resuscitation (CPR) & Emergency Cardiovascular Care (ECC) training during this course. Recommended prerequisite(s): Introduction to Health and Medical Sciences 8302 Some healthcare facilities that accept federal funding (e.g., Medicare, Medicaid) may require criminal background checks and drug screens for students participating in a clinical experience. An updated immunization record will be required prior to the student participating in the clinical experience.

Nurse Aide II is an occupational preparation course emphasizing body systems and diseases as related to advanced clinical care of the acute medical-surgical patient, the chronically ill, and the elderly. Students receive skills training and hands-on clinical experiences in a healthcare setting. Work-based learning in a healthcare facility is part of the course. Students must maintain American Heart Association's Cardiopulmonary Resuscitation (CPR) & Emergency Cardiovascular Care (ECC) training during this course. This course requires students to meet the Virginia Board of Nursing required clock hours to be eligible to take the National Nurse Aide Assessment Program (NNAAP) exam. Additionally, this course includes the approved opiate competencies for health and medical sciences education. **Course fees will apply for uniforms and other items. Students will complete all competencies to become a certified nurse aide and will sit for the Certified Nurse Aid exam at the end of Level**

II. This program is only offered to students that are at least 16 years old, have maintained a C average, and have successfully completed the CNA application. CNA certification is offered through the Virginia Board of Nursing. Students must meet Virginia Placement Test (VPT) requirements to determine eligibility for Dual Enrollment options.

###### R8333 &R8334

Emergency Responder I & Emergency Responder II (4 Credits)

Prerequisite: R8302 strongly encouraged Grade 12

Emergency Responder I tasks for this course 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. Successful completion of this course and instructor endorsement qualifies students to enroll in EMT II to complete the program sequence. Students must complete a minimum of 85 percent of the didactic and lab aspects of the course, per 12VAC5-31-1501 in the Code of Virginia. Successful completion of all course requirements and instructor endorsement may lead to eligibility to take the Virginia State Psychomotor Exam and the National Registry of Emergency Medical Technicians (NREMT) cognitive exam. Students must meet the requirements of the Functional Position Description for the Basic Life Support Provider (refer to EMS.TR.14B and 12VAC5-31-1501 in the Code of Virginia).

In Emergency Responder II students build on their knowledge and skills for providing basic life support by focusing on the areas of EMS operations, medical emergencies, and management of special patient populations. Supervised field experience that includes at least 10 patient contacts outside of school hours is required. Successful completion of this second course in the sequence will earn the student CTE completer status. Successful completion of all course requirements and instructor endorsement may lead to eligibility to take the Virginia State Psychomotor Exam and the National Registry of Emergency Medical Technicians (NREMT) cognitive exam. Students must meet the requirements of the Functional Position Description for the Basic Life Support Provider (refer to EMS.TR.14B and 12VAC5-31-1501 in the Code of Virginia). Students must complete a minimum of 85 percent of the didactic and lab aspects of the course, per 12VAC5-31-1501 in the Code of Virginia. **NOTE: Students must be at least 16 years old prior to the first day of EMT instruction. All students will need to undergo a criminal background check that includes fingerprinting and drug screening. Students will be eligible to sit for the Virginia State EMT Exam, and upon passing be will be able** **to sit for the National Emergency Medical Responder exam. Students must meet Virginia Placement Test (VPT) requirements to determine eligibility for Dual Enrollment options.**

###### R8316

**Sports Medicine/Athletic Training I** (1 credit) Grades 10, 11, 12

In this course, students earn a certification in First Aid/CPR/AED. The course introduces students to topics such as human anatomy and physiology, nutrition, biomechanics, medical terminology, injuries and illnesses, and legal and ethical issues in sports medicine. Students also examine prospective careers in the sports medicine field. Upon successful completion of this course, students are eligible to take Sports Medicine II and pursue certification as a personal trainer. **Workplace Readiness is offered as an approved Industry Certification.**

###### R8317

**Sports Medicine/Athletic Training II** (2 Credits) Grades 11, 12

Prerequisite: R8316

Upon successful completion of this course, students will be eligible to take the National Academy of Sports Medicine- Certified Personal Trainer (NASM-CPT) exam. This course builds upon basic knowledge acquired in Sports Medicine I on topics such as exercise physiology, biomechanics, exercise program design, and injury prevention, assessment, treatment, and management. Students prepare for a career in sports medicine, including completing an internship.

Workplace Readiness is offered as an approved Industry Certification.

### HOSPITALITY AND TOURISM CAREER CLUSTER

###### R8275

**Culinary Arts I** (2 Credits) Grades 10, 11, 12

Culinary Arts I provides students with a foundational understanding of the food service industry and opportunities to build technical skills in food preparation and service. Students examine basic rules of kitchen safety and sanitation, of purchasing and receiving, and of fundamental nutrition. The curriculum incorporates math and science in culinary applications. **ServSafe and Workplace Readiness are offered as approved Industry certifications.**

###### R8276

**Culinary Arts II** (2 Credits) Prerequisite: R8275 Grades 11, 12

Culinary Arts II students continue to acquire a comprehensive knowledge of the food service industry while refining their technical skills. Students apply kitchen safety and sanitation, nutritional principles, and advanced food- preparation techniques. Students complete work-based learning in venues such as the a la carte kitchen, the dining room, and catered functions. **ServSafe and Workplace Readiness are offered as approved Industry certifications. Students must meet Virginia Placement Test (VPT) requirements to determine eligibility for Dual Enrollment options.**

###### R8279

**Culinary Arts Specialization III** (2 Credits)

Prerequisite: R8276 (with Instructor’s Permission)

Grades 12

The Culinary Arts Specialization course provides students with skills and knowledge to pursue careers in the food service industry. In a hands-on environment, students apply nutritional principles, plan menus, use business and mathematics skills, select and maintain food service equipment, and adhere to safety and sanitation standards. Students specialize in one of the following four areas:

* Baking and Pastry Food-Preparation Techniques
* Catering/Banquet Food-Preparation Techniques
* Restaurant Operation Techniques
* Quantity Food-Preparation Techniques

The curriculum continues to place a strong emphasis on science and mathematics knowledge and skills, critical thinking, practical problem-solving, and entrepreneurial opportunities within the field of culinary arts. **ServSafe and Workplace Readiness are offered as approved Industry certifications. Students must meet Virginia Placement Test (VPT) requirements to determine eligibility for Dual Enrollment options.**

### HUMAN SERVICES CAREER CLUSTER

###### R8527

**Cosmetology I** (2 Credits) Grades 10, 11, 12

In this introductory course, students study hair, skin, and

natural nail care. Students are grounded in theory as they prepare to practice procedures in a clinical lab setting and classroom, using mannequins for manipulative skill practice. The first-year course emphasizes personal safety, professionalism, and 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 hair coloring and chemical texture services and develop skills in manicure and pedicure procedures. **Workplace Readiness, NOCTI Cosmetology, and Skills USA Cosmetology (pending) are offered as approved Industry certifications.**

###### R8528

**Cosmetology II** (2 Credits)

Prerequisite: R8527 (with a “C” or higher)

Grades 11, 12

In this continuing course, students build on their theoretical foundation of general sciences and practices in cosmetology to increase proficiency in hair cutting and styling on live models, with attention to professionalism, client consultation, safety, and infection control. Students are trained in safe chemical processes related to permanent waves, relaxers, lightening, and coloring hair. In addition, students learn to care for skin, hands, and feet, developing experience in providing facials, manicures, pedicures, and nail enhancements. Students will be introduced to a business management unit with a focus on managing the salon. **Students enrolling in Level II must have successfully completed Level I competencies and have permission from the course instructor. Workplace Readiness, NOCTI Cosmetology, and Skills USA Cosmetology (pending) are offered as approved Industry certifications.**

###### R8529

**Cosmetology III** (2 Credits)

Prerequisite: R8528 (with a “C” or higher)

Grades 12

In this advanced course, students build on their theoretical foundation of general sciences and practices in cosmetology to increase proficiency in hair cutting and styling on live models, with attention to professionalism, client consultation, safety, and infection control. Students are trained in safe chemical processes related to chemical texture services and advanced hair coloring techniques. They also develop artistic skills with wigs and hair additions. In addition, students learn to care for skin, hands, and feet, developing experience in providing facials, manicures, pedicures, and nail enhancements. An advanced business management unit focuses on managing the salon. Competency completion prepares the student for the Virginia State Licensing Exam. Students can combine classroom instruction and supervised on-the- job training in an approved position or internship with continuing supervision throughout the school year.

Students enrolling in Level III must have successfully completed Level I and Level II competencies and have permission from the course instructor. Cosmetology students that have successfully completed a minimum of 840 hours of instruction and completed all three years with a B average will be eligible to sit for the Virginia State Board of Professional Services in Cosmetology Licensing Exam. Workplace Readiness, NOCTI Cosmetology, and Skills USA Cosmetology are also offered as approved Industry certifications.

R8740

Master Barber I (2credits)

Grades 10,11

In this introductory course students will demonstrate knowledge and skills in a clinical lab setting using mannequins and live models for manipulative practice. The program emphasizes personal safety, professionalism, scalp and hair care, hair cutting, styling, lightening and coloring, shaving, and barbershop management.

R8741

Master Barber II (2 credits)

Prerequisite: R8740 (with a “C” or higher)

Grade 11, 12

In this continuing course, students build on the knowledge and skills from Master Barbering I. Students will apply their knowledge skills in a clinical lab setting, using mannequins and live models for manipulative practice. The program emphasizes skills in the areas of safety, professionalism, hair cutting, styling, shaving, barbershop management, and chemical service procedures.

R8742

Master Barber III (2 credits)

Prerequisite: R8741 (with a “C” or higher)

Grade 12

In this advanced course, students build on their theoretical foundation of general sciences and practices in barbering to increase proficiency in hair cutting and styling on live models, with attention to professionalism, client consultation, safety, and infection control. Students are trained in safe chemical processes related to chemical texture services and advanced hair coloring techniques. They also develop artistic skills with wigs and hair additions. An advanced management unit focuses on creating a barbershop business plant. Completion of this course prepares the student for the Virginia State Licensing Exam. Students enrolling in Level III must have successfully completed Level I and Level II competencies and have permission from the course instructor. Master Barber students that have successfully completed a minimum of 840 hours of instruction and completed all three years with a B average will be eligible to sit for the Board of Barbers and Cosmetology licensing examination.

STEM (Science, Technology, Engineering, and Mathematics) CAREER CLUSTER

###### R8450

**Engineering Explorations I** (1 Credit) Grades 9, 10, 11, 12

In Engineering Explorations I, students examine technology and engineering fundamentals in relation to solving real- world problems. Students investigate engineering history, including major engineering achievements, and they examine the principle engineering specialty fields and their related careers. Students practice engineering fundamentals, using mathematical and scientific concepts, and they apply the engineering design process through participation in hands- on engineering projects. Students communicate project-related information through team- based presentations, proposals, and technical reports.

Workplace Readiness and NOCTI are offered as an approved Industry Certification. Students must meet Virginia Placement Test (VPT) requirements to determine eligibility for Dual Enrollment options.

###### R8451

**Engineering Analysis and Applications II** (1 Credit) Prerequisite: R8450

Grades 10, 11, 12

Engineering Analysis and Applications II is the second of a possible four-course sequence that will allow students to apply the engineering design process to areas of the designed world, explore ethics in a technological world, and examine engineering systems. Students will participate in STEM-based, hands-on projects as they communicate information through team-based presentations, proposals, and technical reports.

Workplace Readiness and NOCTI are offered as an approved Industry Certification. Students must meet Virginia Placement Test (VPT) requirements to determine eligibility for Dual Enrollment options.

###### R8452

**Engineering Concepts and Processes III** (1 Credit) Prerequisite: R8451

Grades 11, 12

Engineering Concepts and Processes III is the third course of a four-course sequence that will enable students to solve real-world problems. This course focuses on building an engineering team, working with case studies, managing projects, delivering formal proposals and presentations, and examining product and process trends. In addition, students continue to apply their engineering skills to determine what postsecondary education engineering pathway they want to follow.

Students will participate in STEM-based, hands-on projects as they communicate information through team-based presentations, proposals, and technical reports. Students enrolling in Level III must have successfully completed Level I and Level II competencies and have permission from the course instructor. Workplace Readiness and NOCTI are offered as an approved Industry Certification. Students must meet Virginia Placement Test (VPT) requirements to determine eligibility for Dual Enrollment options.

###### R8539

**Precision Machining Technology I** (2 Credits) Grades 11, 12

The demand for precision machinists is growing along with the resurgence of the U.S. manufacturing industry.

Machinists are highly skilled, creative problem solvers who are task oriented and self-directed individuals. In this first course, students are taught safety awareness and the foundations of machining, including how to accurately apply measurements, use engineering drawings and sketches, and apply metalworking theory to efficiently plan, manage, and perform general machine maintenance and machining jobs.

This class is taught through a partnership with Virginia Western Community College Workforce Development Services and is taught on their Melrose Campus site. **Workplace Readiness is offered as an approved industry certification.**

###### R8540

**Precision Machining Technology II** (2 Credits) Prerequisite: R8539

Grades 12

The demand for precision machinists is growing along with the resurgence of the U.S. manufacturing industry.

Machinists are highly skilled, creative problem solvers who are task oriented and self-directed individuals. In this advanced course, CNC machining operations are emphasized. Students have the opportunity to increase their skills in applying precise measurements, using engineering drawings and sketches, and applying metalworking theory in order to safely and efficiently plan, manage, and perform general machine maintenance and machining jobs.

Workplace Readiness and NOCTI are offered an approved Industry Certification.

###### R8672

**Welding I** (2 Credits) Grades 10, 11, 12

Welding is required by a wide variety of industries— anywhere fusible materials and high heat are needed to manufacture, repair, or alter tools and products. Students in Welding I are taught to use manual welding, cutting, and electrical arc welding processes to fabricate and join metal parts according to diagrams, blueprints, and specifications. Students will also learn all safety related practices and techniques, including earning the OSHA 10 card. **Workplace Readiness is offered as an approved Industry Certification.**

**R8673**

**Welding II** (2 Credits) Prerequisite: R8672 Grades 11, 12

This course teaches advanced welding students how to fine- tune their craft and to perform welds in various positions, using multiple welding processes. Welding is required by a wide variety of industries—anywhere fusible materials and high heat are needed to manufacture, repair, or alter products. Professional welders are in high-demand and can earn accordingly. **Workplace Readiness is offered as an approved Industry Certification.**

###### R8674

**Welding III** (2 Credits)

Prerequisite: R8673 (with a “C” or higher)

Grades 12

This welding capstone course teaches the industry's emerging technologies and how to demonstrate gas tungsten arc welding (GTAW) and shielded metal arc welding (SMAW) pipe tests. Students are prepared to earn relevant industry credentials toward employment in production or manufacturing facilities. Students enrolling in Level III must have successfully completed Level I and Level II competencies and have permission from the course instructor. **NCCER CORE and AWS are offered as approved Industry certifications.**

### MARKETING CAREER CLUSTER

###### R8120

**Marketing** (1 Credit)

Grades 9, 10, 11, 12

Students examine activities in marketing and business important for success in marketing employment and postsecondary education. Students will learn how products are developed, branded, and sold to businesses and consumers. Students will analyze industry trends and gain hands-on experience in the marketing of goods, services, and ideas. Topics will include professionalism in the workplace, product planning and positioning, promotion, pricing, selling, economic issues, and the impact of technology on the marketplace. Computer/technology applications and DECA activities enhance the course. DECA, the co- curricular student organization, offers opportunities in leadership, community, and competitive events. **NRF Customer Service, NRF Sales, and Workplace Readiness are offered as approved Industry certifications.**

###### R8140

**Fashion Marketing** (1 Credit) Grades 10, 11, 12

This course leads students into the exciting and ever- changing world of fashion. Students gain knowledge of marketing as it relates to the fashion industry. From brick- and-mortar retail establishments to online retail and social media marketing, students will explore aspects such as trends, technology, the buying process, visual merchandising, the nature and history of fashion and fashion designers, and the global impact of the fashion industry on the economy. Academic skills related to the content are part of this course.

NRF Customer Service, NRF Sales, and Workplace Readiness are offered as approved Industry certifications.

###### R8175

**Sports and Entertainment Marketing** (1 Credit) Grades 10, 11, 12

This introductory course helps students develop a thorough understanding of fundamental marketing concepts and theories as they relate to the sports and entertainment industries. Students will investigate the components of customer service skills, branding, product development, pricing and distribution strategies, business structures, sales processes, social media, sponsorships and endorsements, as well as promotion plans needed for sports and entertainment events. The course also supports career development skills and explores career options. Academic skills (mathematics, science, English, and history/social science) related to the content are a part of this course. **NRF Customer Service, NRF Sales, and Workplace Readiness are offered as approved Industry certifications.**

### SPECIAL AND ELECTIVE PROGRAMS

###### R9097

**Leadership Development** (1 Credit) Grades 11, 12

This is an elective class in which students can develop their abilities as leaders. Students will study the characteristics, roles, and responsibilities of a leader; develop leadership skills; practice problem

solving; manage meetings, time, and resources; and communicate in the workplace. Students applying for this course must be at least a 2-year completer in their respective program, have maintained at least a B average (in their CTE courses), and have approval from both the CTE instructor and the ROTEC principal.

### WORK-BASED LEARNING EXPERIENCES

Work-based learning (WBL) is comprised of school- coordinated workplace experiences that are related to

students’ career goals and/or interests, are integrated with instruction, and are performed in partnership with local businesses and organizations. WBL experiences enable students to apply classroom instruction in a real-world business or service-oriented work environment. The Virginia Department of Education (VDOE) recognizes 11 WBL experiences. [Work-Based Learning Opportunities in](https://www.doe.virginia.gov/instruction/career_technical/work-based_learning/documents/work-based-learning-opportunties-in-virginia.docx)

[Virginia](https://www.doe.virginia.gov/instruction/career_technical/work-based_learning/documents/work-based-learning-opportunties-in-virginia.docx) (Word) gives a summary of the criteria for each WBL experience.

Virginia’s career and technical education (CTE) programs

include the following components:

* **Classroom instruction** – the essential component for students to master the academic and technical competencies, attitudes, and work ethic necessary for career success and lifelong learning
* **Career and technical student organizations (CTSOs)** – organizations that provide experiences that reinforce and strengthen classroom learning and prepare students for individual responsibility, teamwork, and leadership in their chosen career pathways
* **WBL experiences** – opportunities for students to apply and refine knowledge, attitudes, and skills through professionally coordinated and supervised work experience directly related to career goals

The WBL experience component builds on the benefits of the other two components by assisting students with the transition from the classroom to the workplace. Students’ knowledge, skills, and attitudes are enhanced by participation in supervised, authentic experiences. WBL experiences are valuable because they help students develop careers beyond their secondary and postsecondary education.

Work based learning opportunities with Roanoke City Public Schools are available on a case-by-case basis for seniors that have met all of their graduation requirements up to their senior year. Work based learning opportunities can include apprenticeships, cooperatives, clinical experiences, job shadowing, internships and service learning. Students can earn high school elective credit for apprenticeships and internships if the required number of hours are met for each category. Interested students are encouraged to speak with their high school counselors.

Two on-the-job training programs specific to the Business and Marketing programs are Business Cooperative Education (BCE) and Marketing Co-Op. Both programs are by application only and must be approved by ROTEC Business and Marketing instructors prior to enrolling.

###### R8699

**Marketing Cooperative Education** (1 Credit) Grades 11, 12

This program allows students to work for a wage in an approved business location and earn a school credit at the same time. Students will receive assistance from the Marketing Co-op Teacher-Coordinator in securing employment whenever possible. Students must apply for entry into this program and be enrolled in **or** have completed one of the Marketing class options. Cooperative on-the-job training is an integral component to the Marketing and Advanced Marketing classes. Enrollment in the course does not guarantee employment.

###### R8990

**Internship** (1-3 Credits)

Grades 11, 12

This is a work-based learning experience that places the student in a real workplace environment to develop and practice career-related knowledge and skills for a specific

career field related to the student’s career interests, abilities, and goals. Internships may be paid or unpaid. It is connected to classroom learning and accompanied by structured reflection activities. Students participating in internships are guided by a formal, written training plan that defines specific academic and workplace skills to be mastered. Students must apply for placement into an internship through the Work- Based Learning Coordinator and their school counselor.

Application does not guarantee a placement. Students who fail to maintain a passing grade in all other classes, and / or who are involved in disciplinary actions will have their placement reviewed and possibly terminated. **Placement in an internship does not satisfy the Virginia Department of Education’s requirements for being a course completer, nor sequential.**

R8989

**Apprenticeship** (3 Credits)

Grades 11, 12

This is a work-based learning experience that places the student in a Department of Labor and Industry-approved program of study, providing students with career opportunities while completing their high school education. Part-time student apprenticeship is available to students where programs have been established in accordance with agreements with local public school divisions.

High school juniors or seniors may be eligible for employment with a company depending on the hours and skill sets that may be required. Part-time employment and hours worked will be determined by the company. All work hours will be documented and will be credited toward the completion of a Registered Apprenticeship program. There are no minimum or maximum work hour requirements in the program. However, to obtain credits, students must complete a minimum of 280 hours per credit, with a maximum of 3 credits. **Placement in an apprenticeship does not satisfy the Virginia Department of Education’s requirements for being a course completer, nor sequential.**

RCPS ANNUAL PUBLIC NOTICE CAREER AND TECHNICAL EDUCATION

Roanoke City Public School Division’s Department of Career

and Technical Education offers a variety of career and technical programs to all students at the middle and high school levels. The program areas include the following:

* + Business and Information Technology
  + Career Connections
  + Family and Consumer Sciences and Education
  + Health and Medical Sciences
  + Marketing
  + Military Science
  + Technology Education
  + Trade and Industrial Education

Roanoke City Public Schools does not discriminate on the basis of race, color, national origin, sex, disability, or age in its programs and activities and provides equal access to the Boy Scouts and other designated youth groups.1 The following persons have been designated to handle inquiries regarding the non-discrimination policies.

Kathleen Duncan, Program Director

Roanoke Technical Education Center (ROTEC) 2200 Grandin Road, SW, Roanoke, VA 24015 540-853-2803

[kduncan@rcps.info](mailto:kduncan@rcps.info)

Hayley Poland, Assistant Superintendent of Equity and Student Services

40 Douglass Avenue, NW, Roanoke, VA 24012 540-853-1437

[hpoland@rcps.info](mailto:hpoland@rcps.info)