

MATA Course Descriptions

MATA Specialty Courses



MATA Administration of Justice I SEM H

Grades 11-12

887308

Credits: 1.5

This course is the first semester course in the MATA Administration of Justice sequence. This course prepares students for entry-level employment in the law enforcement and criminal justice field as well as entrance into institutions of higher learning in the related fields of criminal justice, political science, and law. Topics include, but are not limited to criminal justice professions, ethics, communication skills, report writing, interpreting criminal and civil laws, use of force, emergency response, traffic control, vehicle stops, crime prevention, patrol functions, community policing, criminal investigation, search and seizure, arrest and court procedures, corrections, the juvenile justice system, crime scene investigation, and crime prevention.

Lab Fee: This course does not have a lab fee.

MATA Administration of Justice II SEM H

Grades 11-12

887408

Credits: 1.5

Prerequisite(s): MATA Administration of Justice I H SEM

This course is the second semester course in the MATA Administration of Justice sequence. This course prepares students for entry-level employment in the law enforcement and criminal justice system as well as entrance into institutions of higher learning in the related fields of criminal justice, political science, and law. The course explores career opportunities in the criminal justice community, understanding the constitution, substantive law, procedural law, and due process of law, and its impact on interviews and interrogations, developing probable cause, preparing search and arrest warrants, organized crime and criminal activities associated with those type of investigations, federal taskforces; complex criminal investigation, investigative techniques, the use of informants, wire intercepts, international terrorism and counterterrorism strategies, as well as advanced crime scene investigation.

Lab Fee: This course does not have a lab fee.

MATA Auto Collision Repair Technology I SEM

Grades 11-12

867701

Credits: 1.5

This course is the first semester course in the MATA Auto Collision Repair Technology sequence. This first semester course provides the basic knowledge of the construction of the automobile and skills in the use of body shop materials, equipment, tools, and procedures in the collision and refinishing fields. Basic welding, dent and plastic repair, bolt on parts replacement, and estimating are among the skills taught in this course. Students will identify and follow safe working procedures and gain experience through theory and hands-on shop projects.

Lab Fee: This course does not have a lab fee.

MATA Auto Collision Repair Technology II SEM

Grades 11-12

867702

Credits: 1.5

Prerequisite: MATA Auto Collision Repair Technology I SEM

This course is the first semester course in the MATA Auto Collision Repair Technology sequence. This second semester course gives students the opportunity to develop their skills through applied theory and hands on shop projects using knowledge gained in Collision Repair Technology I. Instructional topics include preparing vehicles for painting, mixing and applying automotive paints, identifying paint related defects and their removal, and paint detailing. Students explore career options such as collision repair technician, refinish technician, automotive parts specialist, glass technician, detailer, estimator, and insurance adjuster.

Upon successful completion of this course, students are prepared to perform many aspects of collision repair and may qualify for sponsored apprenticeship programs.

Lab Fee: This course does not have a lab fee.

MATA Auto Service Technology I SEM
Grades 11

862401
Credits: 1.5

This course is the first semester course in the MATA Auto Servicing Technology sequence. This program provides the opportunity for students to develop the skills needed to follow environmental and safety practices and inspect, diagnose, adjust, and repair the systems of the modern technological automobile. An industry standard curriculum, master-certified, credentialed by the Automotive Service Excellence (ASE) and National Automotive Technician Educational Foundation (NATEF), provides the student the training format to proceed from the basic to advanced level technician in in brakes, steering and suspension, engine repair, and heating ventilation & air conditioning (HVAC). Students may obtain ASE certification. Internship programs are available to students meeting certain criteria. Students can work with selected mentors at local dealerships or other auto servicing businesses. This course is part of the Loudoun Governor's Career and Technical STEM Academy.

Lab Fee: This course does not have a lab fee.

MATA Auto Service Technology II SEM
Grade 11

862402
Credits: 1.5

Prerequisite: MATA Auto Service Technology I SEM

This course is the second semester course in the MATA Auto Servicing Technology sequence, and covers environmental and safety practices and inspections, diagnosing, adjusting, and repairing the systems of the modern technological automobile. An industry standard curriculum, master-certified by ASE (Automotive Service Excellence) and NATEF (National Automotive Technician Educational Foundation), provides the student the training format to proceed from the basic- to advanced-level technician in Electricity, Manual Drive train and Axle, Engine Performance, and Automatic Transmission. Students may obtain ASE certification in these areas. Internship programs are available to students meeting certain criteria. Students can work with selected mentors at local dealerships or other auto servicing businesses. This course is part of the Loudoun Governor's Career and Technical STEM Academy.

Lab Fee: This course does not have a lab fee.

MATA Auto Service Technology III
Grade 12

862600
Credits: 3

Prerequisite: MATA Auto Service Technology II SEM

This course is the third course in the MATA Auto Servicing Technology sequence, and covers the full second year of instruction. An industry standard curriculum, master-certified by ASE (Automotive Service Excellence) and NATEF (National Automotive Technician Educational Foundation), provides the student the training format to proceed from the basic- to advanced-level technician in Electricity, Manual Drive train and Axle, Engine Performance, and Automatic Transmission. Students may obtain ASE certification in these areas. Internship programs are available to students meeting certain criteria. Students can work with selected mentors at local dealerships or other auto servicing businesses. This course is part of the Loudoun Governor's Career and Technical STEM Academy.

Lab Fee: \$30.00

MATA Biomedical Technology I
Grades 11

885301
Credits: 3

This first-year course in the 2-year pathway focuses on various Biomedical techniques ranging from Bioprocessing and DNA analysis, to medicine, biomechanical systems, and the environment. Students completing the 2-year sequence gain foundational knowledge and skills appropriate for a variety of medical-related career paths in the field of biotechnology. They are introduced to laboratory procedures that support bioscience research and practice, and they investigate safety, quality assurance, and the ethical concerns associated with the field of biomedical technology.

Lab Fee: This course does not have a fee.

MATA Biomedical Technology II
Grades 12

885302
Credits: 3

Prerequisite: MATA Biomedical Technology I

This second-year course in the 2-year pathway focuses on human body systems and examines their interactions. Exploration of science in action takes place while students are building organs and testing their movements with data acquisition software. A fictitious family is monitored and followed and students investigate how to prevent, diagnose, and treat disease. Students explore how to detect and fight infection and screen and evaluate the code in human DNA. Students take on the roles of biomedical professionals to solve real-world medical cases. Students are exposed to a range of interventions related to immunology, surgery, genetics, pharmacology, medical devices, and diagnostics. Using knowledge gained throughout the two-year program, students will develop a research project to design innovative solutions for pressing health challenges, from public health and biomedical engineering to clinical medicine and physiology.

Lab Fee: This course does not have a fee.

MATA Biotechnology
Grades 11-12

885200
Credits: 3

This one-year course introduces students to the world of biotechnology which includes the study of living organisms or their products to modify human health and the human environment. Students explore the main areas of biotechnology: medical, industrial, agricultural, marine and bioinformatics. Topics include plant-based pharmaceuticals and applications, bioethics, forensics, health and medical applications, agriculture, and environmental management. Through extensive lab experiences, students use a variety of laboratory equipment and become involved in research and technical writing. Students are required to complete an independent research project. This course is part of the Loudoun Governor's Career and Technical STEM Academy program.

Lab Fee: \$30.00

MATA Building Construction I SEM
Grades 11-12

865701
Credits: 1.5

This course is the first semester course in the MATA Building Construction sequence. Students acquire basic understanding of residential construction and the carpentry trade. The program also provides instruction on plan reading and comprehension. Units of instruction include the completion of an Occupational Safety and Health Administration (OSHA) certification program and the study of structural components with emphasis on how they relate to each other, code, and to the finished product. This includes foundation work, floor and wall framing, interior and exterior finishes, and the construction and installation of cabinetry.

Lab Fee: This course does not have a lab fee.

MATA Building Construction II SEM
Grades 11-12

865702
Credits: 1.5

Prerequisite: MATA Building Construction I SEM

This course is the second semester course in the MATA Building Construction sequence. Students expand their knowledge base with advanced skills, frequently working independently. Students earn their OSHA 10 Card Certification and complete more in-depth work. Upon successful completion of this program, students may be prepared to perform many aspects of building construction and are eligible for sponsored apprenticeship programs. The graduating students receive professional accreditation from the National Center for Construction Education and Research (NCCER) for their course work.

Lab Fee: This course does not have a lab fee.

MATA CISCO I DE QTR
Grades 11-12

895106
Credits: 0.75

This first-quarter course covers the fundamentals of computer and mobile device hardware and software, and advanced concepts such as networking, security, networking concepts, design, implementation, management and operation at an introductory and advanced level. Students who complete this course will be able to assemble a

computer system, install operating systems, connect devices to the Internet, and share resources in a networked environment. This course helps prepare students for the CompTIA A+ certification exam and serves as an introduction to topics covered in the Cisco II-IV courses.

Lab Fee: This course does not have a lab fee.

MATA CISCO II DE QTR

895206

Grades 11-12

Credits: 0.75

Prerequisite: MATA CISCO I DE

This second-quarter course builds upon the topics presented in CISCO I. A significant portion of the curriculum is drawn from Cisco Networking Academy CCNAv7 courses, which will help students develop workforce readiness skills and build a foundation for success in networking-related careers and degree programs. Students achieve a basic understanding of how networks operate and how to build simple local area networks (LANs), perform basic configurations for router and switches, and implement Internet Protocol (IP). Upon completion of all three Cisco CCNAv7 courses, students will be prepared to take the Cisco Certified Network Associate (CCNA) certification exam.

Lab Fee: This course does not have a lab fee.

MATA CISCO III DE QTR

895306

Grades 11-12

Credits: 0.75

Prerequisite: MATA CISCO II DE

This third-quarter course builds upon the topics presented in CISCO I & II, and will help students take the basic networking skills learned in the Cisco I course, and progress to more complex enterprise and theoretical networking models. This course covers the architecture, components, and operations of routers and switches in small networks and introduces wireless local area networks (WLANs) and network security. Students learn to configure and troubleshoot routers and switches for advanced functionality using security best practices and resolve common issues with protocols and IPv4/IPv6 networks.

Lab Fee: This course does not have a lab fee.

MATA CISCO IV DE QTR

895406

Grades 11-12

Credits: 0.75

Prerequisite: MATA CISCO III DE

This final course in the CISCO sequence builds upon the topics covered in CISCO I, II, and III. This course prepares students to learn, apply, and practice CCNA knowledge and skills through a series of in-depth hands-on experiences and simulated activities that reinforce their learning. This course describes the architecture, components, operations and security for large, complex networks, including wide area network (WAN) technologies. This course emphasizes network security concepts and introduces network virtualization and automation. Upon completion of this course, students will be prepared to take the Cisco CCNA certification exam.

Lab Fee(s): This course does not have a lab fee.

MATA Computer & Digital Animation I H

839100

Grade 11

Credits: 3

This is the first-year course in the MATA Computer & Digital Animation sequence. Computer & Digital Animation I is an introductory course in digital content creation and animation. Students produce computer-generated models, characters, and animations using professional software. Students study the production pipeline from story idea to final render. The software used is from the Autodesk Entertainment Creation Suite. Software covered includes 3ds Max, and Mudbox. This course is part of the Loudoun Governor's Career and Technical STEM Academy.

Lab Fee: This course does not have a lab fee.

MATA Computer & Digital Animation II

839006

Grade 12

Credits: 3

Prerequisite: Computer & Digital Animation I

This is the second-year course in the MATA Computer & Digital Animation sequence. Computer & Digital Animation II is a continuation of topics covered in MATA Computer & Digital Animation I. Students produce CG models, characters, and animations using software from the Autodesk Entertainment Creation Suite. Covered software includes 3dsMax, Maya, Mudbox, Motionbuilder and Sketchbook Designer. Students create content suitable for TV, film, computer simulations, computer games, and architectural visualization. This course is part of the Loudoun Governor’s Career and Technical STEM Academy.

Lab Fee: This course does not have a lab fee.

MATA Computer Integrated Engineering & Design (CIED) I DE **898506**
Grade 11 **Credits: 3**

This is the first-year MATA CIED course and provides students with a foundation of skills needed for manufacturing and engineering in today’s “high tech” workplace. The course focus is on hands-on, task-based activities where students learn and practice industrial and engineering skills. Students follow a curriculum covering robotics, CADD/CAM, electrical systems, fluid systems, materials engineering, mechanical systems, quality assurance, computer control, solar photovoltaic installation, and wind turbine installation. Students are introduced to Solidworks, Mastercam and mill/lathe CNC programming. MATA CIED gives students a jump-start to pursue careers in engineering technology. This course is part of the Loudoun Governor’s Career and Technical STEM Academy.

Lab Fee: \$30.00

MATA Computer Integrated Engineering & Design (CIED) II H **898602**
Grade 12 **Credits: 3**

Prerequisite: Computer Integrated Engineering & Design I DE

This is the second-year course in the MATA CIED sequence. MATA CIED II extends the foundational topics covered and developed in MATA CIED I, and students develop proficiency in Solidworks. Students develop a capstone engineering related project throughout this course. This course is part of the Loudoun Governor’s Career and Technical STEM Academy.

Lab Fee: \$30.00

MATA Cosmetology I SEM **873701**
Grade 11 **Credits: 1.5**

The first semester of Cosmetology introduces students to the basics of shampooing and hairstyling, scalp treatments, hair cutting, finger waving, pin curling, roller techniques, chemical relaxing, permanent waving, hair coloring, facials, make-up, wig care, and manicuring. Related subjects include public health, personal hygiene, bacteriology, and salon management. Students are required to purchase a cosmetology kit which includes items needed for the two-year program.

Lab Fee: \$280.00

MATA Cosmetology II SEM **874702**
Grade 11 **Credits: 1.5**

Prerequisite: MATA Cosmetology I SEM

In this second semester course, students are taught the skills necessary to develop job entry requirements as a cosmetologist by performing the services expected in a professional salon environment. Advanced skills include hair cutting, chemical texture services, hair coloring, lightening, special effects hair color services and color removal application hairstyling, thermal waving and pressing, artificial nail applications, and waxing services. Students also attain training in salesmanship, salon management and ownership, product knowledge, and public relations. Human anatomy and physiology, chemistry and electricity, diseases and disorders of the scalp, skin, and nails are also covered.

Lab Fee: This course does not have a lab fee.

MATA Cosmetology III
Grade 12

874500
Credits: 1.5

Prerequisite: MATA Cosmetology II SEM

This course is the full second year in the MATA Cosmetology sequence. 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. (this semester course is directly followed by MATA Nail Design Technology)

Lab Fee: \$15.00

MATA Culinary Arts I SEM
Grades 11-12

875701
Credits: 1.5

This course is the first semester in the MATA Culinary Arts sequence. This program is designed to prepare students for employment in the culinary industry or to continue with post-secondary training in such areas as culinary arts, baking and pastry, or restaurant management. Students complete units in the history of hospitality, safety, sanitation, equipment use, recipe calculation and production, management, and professionalism. Commercial methods of food storage, preparation, and handling are practiced. Skills are developed in the preparation of appetizers, soups, salads, meats, fruits, vegetables, breads, garnishes, and desserts. Students are visited by top Culinary schools to expand their knowledge of post-secondary school opportunities. Visits from the placement department are arranged to aid the students with resume development. Employment and interviewing skills will be practiced. Students participate in both on-site and off-site catering events and have many opportunities to use their creativity as they design and prepare food for service and display. Participation in culinary competitions is offered and encouraged. Students will take an OSHA exam.

Lab Fee: \$50.00

MATA Culinary Arts II SEM
Grades 11-12

875702
Credits: 1.5

Prerequisite: MATA Culinary Arts I SEM

This course is the second semester in the MATA Culinary Arts sequence. Students will learn advanced production and service skills used in the culinary industry. Nutrition, management skills, marketing, sustainability, and exploration of ethnic cuisines are emphasized. Students will demonstrate knowledge of applying advanced food preparation and baking techniques. Visits from leaders in the local restaurant industry are arranged for students. Technology is utilized to conduct nutritional analysis, menu planning, costing, and inventory control. Students will practice serving guests and dining room set up. Students will use business and math techniques to develop menus. Collaboration with other MATA courses is encouraged through menu design, restaurant design, molecular gastronomy, and off-site catering. Students will complete Workplace Readiness Testing. Students will complete the ServSafe Industry test.

Lab Fee: This course does not have a lab fee.

MATA Cybersecurity I DE SEM
Grades 11-12

894201
Credits: 3

In this first-semester course of the MATA Cybersecurity program, students enter the world of computer technology and gain practical experience in assembling a computer system. Students will install, configure, and secure various operating systems. Students will troubleshoot computers and peripherals and use system tools and diagnostic software. They develop skills in computer networking and resource sharing. In addition, students explore the relationships between internal and external computer components. Upon successful completion of the course, students may qualify to take the CompTIA A+ certification exam.

Lab Fee: This course does not have a lab fee.

MATA Cybersecurity II DE SEM
Grades 11-12

894202
Credits: 3

Prerequisite: MATA Cybersecurity I DE SEM

In this second-semester course of the MATA Cybersecurity program, students continue work in the world of computer technology. Students develop advanced skills in computer networking and resource sharing. Upon successful completion of the course, students may be qualified to take the CompTIA A+, Network +, and/or Security + certification exam.

Lab Fee: This course does not have a lab fee.

MATA Emergency Medical Technician (EMT) I H SEM
Grades 11-12

859507
Credits: 1.5

The EMT program is designed to provide training to individuals in order to function independently in a medical emergency and serve as a vital link in the chain of the health care team. This course includes all skills necessary to provide emergency medical care as an attendant-in-charge with a basic life support ambulance service or other specialized rescue service.

Lab Fee: \$90.00

MATA Emergency Medical Technician (EMT) II H SEM
Grades 11-12

859508
Credits: 1.5

Prerequisite: MATA Emergency Medical Technician (EMT) I

This second semester course builds upon the topics covered in MATA Emergency Medical Technician I. The tasks for this course represent the National Emergency Medical Services Educational Standards. Students build on their knowledge and skills for providing basic life support by focusing on the areas of emergency medical services (EMS) operations, medical emergencies, and management of special patient populations. Supervised field experience 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 EMT cognitive exam.

Lab Fee: This course does not have a lab fee.

MATA Environmental Plant Science I DE SEM
Grades 11-12

885101
Credits: 1.5

This one-year pathway focuses on plants as related to environmental responsibility. Topics in this first semester include introduction to horticulture, forestry, natural resource management, plant botany and physiology, sustainable landscaping practices, woody plants, soil science and best business practices. Students completing both semesters enter a variety of college fields including horticultural and environmental sciences, agricultural technology, forestry, natural resource management, conservation, agronomy, biology, plant breeding and genetics, landscape design and management, golf course management, floral design and marine sciences and agricultural education. Additionally, industry certification may be acquired in the following: Virginia Nursery and Landscape Association as a Certified Horticulturist; Virginia Flower Growers Association as a Certified Greenhouse Operator; Virginia Department of Agriculture and Consumer Service as a Pesticide Technician. This course is part of the Loudoun Governor's Career and Technical STEM Academy.

Lab Fee(s): \$35.00

MATA Environmental Plant Sciences II DE SEM
Grades 11-12

885102
Credits: 1.5

Prerequisite: MATA Environmental Plant Sciences I DE SEM

The second semester of this pathway focuses on plant propagation and genetics, fertilization practices, plant growth and development, greenhouse systems and production, plant diagnostics and pest management, environmental conservation and sustainable agricultural practices.

Lab Fee(s): none

MATA Firefighter I SEM

859701

Grades 11-12

Credits: 1.5

Prerequisite: Must be affiliated with a volunteer fire or rescue department in Loudoun County.

During this first semester course, students are taught the Virginia Department of Fire Programs curriculum. Emphasis is placed on moving the new firefighter ahead to be more prepared and assume more of a leadership role within a department. Instruction includes the proper use of personal protective equipment, maneuvering through dark and small areas, use of ladders, use of hoses and nozzles, techniques and equipment for the extinguishment of fires, fire behavior, basic hazardous materials operation/mitigation, and ropes/knots. A combination of classroom study, scenarios, and modular practical experiences prepares students to carry out most fire ground functions under the direct supervision of an officer or experienced firefighter. Students learn to make basic evaluations of safety problems and assume leadership roles in conducting interior attack and search operations.

Lab Fee: \$20.00

MATA Firefighter II SEM

859702

Grades 11-12

Credits: 1.5

Prerequisite: MATA Firefighter I SEM

This course builds upon the professional knowledge gained and skills taught in MATA Firefighting I. Students respond to simulated hazardous-materials incidents and conduct rescue operations, including vehicle extrication. Students react to multi-faceted situations (e.g., caused by simulated terrorism, accidents, and natural disasters) by managing resources such as medivac helicopters, emergency medical personnel, technical rescue teams, and community-based organizations. Students will become familiar with the procedures, equipment, and technologies used by current fire departments. This course challenges students academically, mentally, and physically and meets the standards of National Fire Protection Association (NFPA) leading to Firefighting II certification.

Lab Fee: This course does not have a lab fee.

MATA Graphic Communications I SEM

879701

Grade 11

Credits: 1.5

This course is the first semester course in the MATA Graphic Communications sequence and covers an introduction and investigation of variable topics in graphic design, computer graphics and visual communication principles, theory and practice. Various fundamental design philosophies and applications are examined as students work individually and collaborate in teams to design digital projects. Emphasis on concept driven projects include aspects of designs related to digital techniques of layout, typography and digital image/photo manipulation, digital illustration, layout, animation, and web design. Construction and composition of finished work is created using a variety of interactive productivity software programs, books and various learning resources. The course includes safety standards related to equipment used, research, writing, text reading, discussions, oral presentations, lectures, specific project assignments, and design concept development in a time-based context. In addition, students learn workplace readiness skills of corporate, client-based and public service-based interactive design strategies.

Lab Fee: \$75.00

MATA Graphic Communications II SEM

879702

Grade 11

Credits: 1.5

Prerequisite(s): MATA Graphic Communications I SEM

This course is the second semester course in the MATA Graphic Communications sequence. This course covers advanced concepts and techniques of design utilizing interactive software to develop and compose a

comprehensive professional portfolio. Curriculum includes contracts, copyright issues, interviewing skills, resume and cover-letter writing, design briefs and proposals, freelance business issues, as well as portfolio preparation and presentation. Portfolio presentation includes concepts learned in MATA Graphic Communications I. Under the guidance and supervision of faculty, students learn first-hand how to establish and run a creative design firm by working directly with clients, establishing and forecasting budgets and working within those budgets. In addition, students work with printers and press runs to meet real working deadlines. Students compete in annual design/print competitive association activities and are given the opportunity to obtain PrintEd certifications.

Lab Fee: This course does not have a lab fee.

MATA Graphic Communications III
Grade 12

879300
Credits: 3 (local credit only)

Prerequisite: MATA Graphic Communications II SEM

This is the third course in the MATA Graphic Communications sequence. This course covers advanced concepts and techniques of design utilizing interactive software to develop and compose a comprehensive professional portfolio. Curriculum includes contracts, copyright issues, interviewing skills, resume and cover-letter writing, design briefs and proposals, freelance business issues, as well as portfolio preparation and presentation. Portfolio presentation includes concepts learned in MATA Graphic Communications I. Under the guidance and supervision of faculty, students learn first-hand how to establish and run a creative design firm by working directly with clients, establishing and forecasting budgets and working within those budgets. In addition, students work with printers and press runs to meet real working deadlines. Students compete in annual design/print competitive association activities and are given the opportunity to obtain PrintEd certifications.

Lab Fee: \$75.00

MATA Health Informatics
Grades 11-12

861100
Credits: 3

This MATA 1-year pathway explores aspects of Health Informatics to include the history of health information technology (IT), the Electronic Health Record (EHR), ethical and privacy issues, and cybersecurity and data breaches. Students will be introduced to the various technology and trends that affect the healthcare industry.

Lab Fee: This course does not have a fee.

MATA Heating, Ventilation, & Air Conditioning (HVAC) I SEM
Grades 11-12

881701
Credits: 1.5

This course is the first semester course in the MATA Heating, Ventilation, & Air Conditioning (HVAC) sequence. This course provides basic knowledge and skills in residential and commercial air conditioning, refrigeration, and heating. Instruction includes basic electricity, safety, the physics of the refrigeration process, soldering and silver brazing, electrical components and controls, wiring diagrams, basic plumbing, sheet metal fabrication, and duct installation.

Lab Fee: This course does not have a fee.

MATA Heating, Ventilation, & Air Conditioning (HVAC) II SEM
Grades 11-12

881702
Credits: 1.5

Prerequisite: MATA Heating, Ventilation, & Air Conditioning (HVAC) I SEM

This course is the second semester course in the MATA Heating, Ventilation, & Air Conditioning (HVAC) sequence. Students are provided advanced skills in residential and commercial air conditioning, refrigeration, and heating. The students learn to install, maintain, and repair heating and cooling equipment. Instruction includes air distribution and ventilation systems, refrigeration equipment, oil, gas, electric and heat pump systems, residential plumbing, and electrical layout and installation. Upon successful completion of this course, students are prepared to perform most aspects of HVAC and qualify for sponsored apprenticeship programs. Students may be eligible to take the Environmental Protection Agency (EPA) Certification Exam, the Universal R-410 A Certification Exam, any or all of the 12 HVAC Excellence Exams, and the National Construction Career Test (NCCT).

Lab Fee: This course does not have a fee.

**MATA Introduction to Health and Medical Sciences DE
Grade 10**

**861006
Credits: 3**

Prerequisites: Health Care Providers' Current Immunization Record, Current (within last 3 months) 2-step PPD test, and Medical Insurance (private or school-purchased).

This course introduces students to a vast array of careers within the health and medical professions. Students learn basic medical skills necessary to function safely and efficiently within the medical community. Career exploration allows students to make informed choices within related professions while preparing for future educational requirements. Students are exposed to medical terminology; pharmacology; anatomy and physiology; and therapeutic and diagnostic interventions. Instruction also emphasizes professionalism, legal/ethical issues, and communication skills. Students rotate through various medical settings for observational opportunities, connecting classroom knowledge with real-life experiences. This course is part of the Loudoun Governor's Career and Technical STEM Academy.

Lab Fee: \$70.50

**MATA Masonry I SEM
Grades 11-12**

**898701
Credits: 1.5**

This course is the first course in the MATA Masonry sequence. This course familiarizes students with various materials, tools, equipment, and practices of the masonry trade. The program helps students develop the skills and technical knowledge to lay concrete, block, brick, and ceramic tile. Students also study blueprint reading and do labor and material estimates for residential and commercial projects. Students are eligible to obtain an OSHA-10 certificate.

Lab Fee: This course does not have a lab fee.

**MATA Masonry II SEM
Grades 11-12**

**898702
Credits: 1.5**

Prerequisite: MATA Masonry I SEM

This course is the second course in the MATA Masonry sequence. Students advance their skills with concrete, block, brick, and ceramic tile. They complete various projects such as chimneys, fireplaces, sidewalks, and arches. They also learn repair and renovation work. Stone masonry is included and prepares students to design and repair stone walls, fireplaces, sidewalks, and entryways.

Lab Fee: This course does not have a lab fee.

**MATA Medical Laboratory Technology I DE
Grade 11**

**861206
Credits: 3**

The first-year course in Medical Laboratory Technology presents is designed to provide student foundational knowledge and skills appropriate for a variety of medical-related career paths in the field of medical laboratory science. Students are introduced to diagnostic laboratory procedures that support medical practice and research, and they investigate safety, quality assurance, and ethical concerns associated with the field of laboratory medicine. Medical laboratory disciplines covered include: Clinical Chemistry, Urinalysis, Microscopy, Clinical Hematology, and Phlebotomy. Laboratories stress actual student performance of the routine tests normally seen in the clinical setting. Students may have the opportunity to participate in organized field experiences. This course is part of the Loudoun Governor's Career and Technical STEM Academy.

Lab Fee: This course does not have a fee.

**MATA Medical Laboratory Technology II DE
Grade 12**

**861706
Credits: 3**

Prerequisite: MATA Medical Laboratory Technology I DE

Students build on the foundational knowledge and skills obtained in Medical Laboratory Technology I. The student uses the basic principles and skills necessary to continue their studies in these additional medical laboratory disciplines: Clinical Microbiology, Immunohematology, Coagulation/Hemostasis, and Clinical Laboratory Biotechnology techniques. Competencies includes performing the technique correctly, understanding the theory of

the procedures, and the proper interpretation of results. Laboratories stress actual student performance of the routine tests normally seen in the clinical setting. Students may have the opportunity to participate in organized field experiences. This course is part of the Loudoun Governor's Career and Technical STEM Academy.

Lab Fee: This course does not have a fee.

MATA Nurse Aide I SEM

889701

Grade 11-12

Credits: 3

The MATA Nurse Aide pathway is regulated under the Virginia Board of Nursing. Students study growth and development across the lifespan, anatomy and physiology, and medical terminology. Students are introduced to concepts of infection prevention and disease processes, as well as careers in nursing, health professions, and STEM-H professions. Entry level skills include communication; measuring and recording of vital signs; cardiopulmonary resuscitation; and general patient care. The course emphasizes care for the acute medical-surgical patient, the chronically ill, and the elderly. A forty-hour clinical rotation at a long-term care facility is a required component of the course. Students successfully completing the course will take the National Nurse Aide Assessment Program (NNAAP) exam to become a Certified Nurse Aide.

MATA Nurse Aide II SEM

889702

Grade 11-12

Credits: 1.5

Prerequisite: MATA Nurse Aide I SEM

This is the second semester of the Nurse Aide sequence, and builds upon the concepts of MATA Nurse Aide I SEM. A forty-hour clinical rotation at a long-term care facility is a required component of the course. Students successfully completing the course will take the National Nurse Aide Assessment Program (NNAAP) exam to become a Certified Nurse Aide.

Lab Fee: This course does not have a lab fee.

MATA Pharmacy Technology I DE

861306

Grade 11

Credits: 3

Prerequisite(s): Health Care Providers' Current Immunization Record, Current (within last 3 months) 2-step PPD test, and Medical Insurance (private or school-purchased).

This certificate program is designed to provide students with the basic skills and knowledge to begin work as a pharmacy technician. The coursework will fulfill the requirements of the Board of Pharmacy and prepare students to take either the state examination or the national examination administered by the Pharmacy Technician Certification Board. Trained, experienced pharmacy technicians who can demonstrate the right skills and knowledge should be able to pursue many exciting and respected career options or postsecondary study in the pharmacy field. Students have the opportunity to shadow in a professional setting as well as participate in organized field experiences. This course is part of the Loudoun Governor's Career and Technical STEM Academy. Lab Fee: \$70.50

MATA Pharmacy Technology II H

862304

Grade 12

Credits: 3

Prerequisite: MATA Pharmacy Technology I DE

This second year of the certificate program is designed to provide students with the basic skills and knowledge to begin work as a pharmacy technician. The coursework fulfills the requirements of the Board of Pharmacy and prepares students to take either the state examination or the national examination administered by the Pharmacy Technician Certification Board. Emphasis is placed on clinical field experiences and/or coordinated work-experiences. This course is part of the Loudoun Governor's Career and Technical STEM Academy.

Lab Fee: This course does not have a lab fee.

MATA Radiology Technology I DE

861406

Grade 11

Credits: 3

The course informs students early in their study of what they can expect from a career in radiologic technology, requirements for certification, options for advancement, and what is required of them as allied healthcare workers. The student develops an understanding of the radiographer as a central member of the health care team and a valuable assistant to the radiologist. This curriculum is designed to prepare the student to understand the anatomy and physiology assessed in diagnostic images of the human body. The student develops an understanding of the safe use of radiation within the medical field. Additional topics of study include the history of the radiological profession, medical ethics, concepts of imaging, radiobiology, radiation protection, and the future of radiologic technology careers. Students may have the opportunity to shadow in professional settings. This course is part of the Loudoun Governor's Career and Technical STEM Academy.

Lab Fee: This course does not have a lab fee.

MATA Radiology Technology II H

861402

Grade 12

Credits: 3

Prerequisite: MATA Radiology Technology I DE

This course builds upon the topics covered in MATA Radiology Technology I. As part of the course content, students are encouraged to engage in volunteer practices within a healthcare setting. Students develop an understanding of the biological and technical factors involved in medical imaging. Emphasis is on extensive anatomy and physiology, disease processes, the physics of medical imaging equipment, and the effect of medical radiation on biologic tissue. Students learn to apply radiation protection procedures for patients and medical imaging personnel. In addition, students expand their understanding of patient care within the radiology department to include assessment of vital signs, immobilization techniques for imaging, safe use of oxygen and pharmacologic during imaging procedures, use of sterile techniques, and evaluation of medical emergencies. This course is part of the Loudoun Governor's Career and Technical STEM Academy.

Lab Fee: This course does not have a lab fee.

MATA Television Production & Digital Moviemaking I SEM

893701

Grades 11-12

Credits: 1.5

This first semester course covers camera operation, news reporting, non-linear editing, scriptwriting, audio production techniques, production planning, the business of video production, studio and control room operation, basic marketing, and production techniques. Students use a wide range of professional equipment and produce projects. Students receive hands-on training with computer effects, computer editing, professional camera equipment, and audio production.

Lab Fee: \$40.00

MATA Television Production & Digital Moviemaking II SEM

893702

Grades 11-12

Credits: 1.5

Prerequisite: MATA Television Production & Digital Moviemaking I SEM

The second semester offers students more advanced editing opportunities and more complex productions. Special productions are created individually and in teams. Students use a wide range of professional equipment and produce projects. Students receive hands-on training with advanced computer effects, advanced computer editing, professional camera equipment, and complex audio production.

Lab Fee: This course does not have a lab fee.

MATA Veterinary Science I SEM

885401

Grades 11-12

Credits: 1.5

This is the first semester course of the MATA Veterinary Science program. This course orients the student to Veterinary Science, covering topics such as anatomy and physiology, terminology, safety and sanitation, parasitology, posology, animal nutrition, breeds, professional conduct, office management, and emerging technologies in animal agriculture. Students are involved in performing clinical exams, conducting laboratory and hospital procedures and handling animals coordinated with area veterinary clinics and hospitals.

Lab Fee: \$75.00

MATA Veterinary Science II SEM
Grades 11-12

885402
Credits: 1.5

Prerequisite: MATA Veterinary Science I SEM

This is the second semester course of the Veterinary Science program. Students expand their knowledge of animal science and the care of animals, including animal structure and function, microbes and disease prevention, parasitology, and genetics and breeding. Students develop more advanced skills and techniques for assisting the veterinarian/technician in the following areas: performing first aid and surgery, applying aseptic techniques, performing technical functions, administering medication, handling death and dying, working with wildlife, and performing office functions. On-the-job clinical instruction coordinated by the instructor may be included in veterinary offices or animal clinics.

Lab Fee: This course does not have a lab fee.

MATA Welding I DE SEM
Grade 11

896701
Credits: 1.5

This first semester course consists of instruction in the set up and safe operation of Oxy-fuel Welding and Cutting, Plasma Arc cutting, Shielded Metal Arc and beginning GMAW welding processes. Students are trained in welding, cutting, and brazing. Class activities provide instruction in art and ornamental welding, preparation for the American Welding Society (AWS) Test, and construction and repair of metal projects.

Lab Fee(s): This course does not have a lab fee.

MATA Welding II DE SEM
Grade 11

896702
Credits: 1.5

Prerequisite: MATA Welding I DE SEM

Emphasis in this course is on Shielded Metal Arc Welding in the horizontal, in all position, and pipe. Students have the opportunity to practice for the AWS's Limited and Unlimited Welding Thickness Test. Welding certification options are available. Advanced work on the MIG and TIG processes is included.

Lab Fee: This course does not have a lab fee.

MATA Welding III DE
Grade 12

896306
Credit(s): 3

Prerequisite: MATA Welding II DE SEM

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. This course counts as an elective credit.

Lab Fee: This course does not have a lab fee.