MST

Manchester School of Technology

Program of Studies

2022-23

- Career and Technical Center
- MST High School

100 Gerald Connors Circle/Manchester, NH 03103/603-624-6490/mst.mansd.org

MST

Manchester School of Technology

Region 15 Career and Technical Center
Manchester, New Hampshire

Manchester School of Technology, the largest of twenty-eight Career and Technical Centers in New Hampshire and an integral part of the public school system of the City of Manchester, has provided high school students from Manchester, Goffstown, Bedford and Londonderry with unique opportunities for developing high technology career and college prep skills since its opening in 1982.

It is the mission of the Manchester School District to provide safe, healthy, nurturing and respectful environments in which all students have the opportunity to acquire knowledge and skills that will enable them to become life-long learners as well as positive and productive citizens.

In support of the District's goals, the Manchester School of Technology has a unified commitment to excellence in meeting the educational needs of individuals in the Manchester School District while being accountable to its member communities. This commitment is to enable students to be successful in their chosen career and technical pursuits and to become productive members of society.

At MST, we are proud to be an innovator and leader in the field of secondary Career and Technical Education. We are proud of our curriculum, our outstanding facility and our excellent faculty.

Most of our students continue their education at universities, colleges and technical schools and can directly enter the work force. They may now be found in responsible positions throughout the country. We are proud of our graduates because of their contribution to society and their role as respected citizens. We expect that our current students will set similar goals and will work persistently during their time with us to achieve these goals.

Interested students should consult with their high school guidance counselor to determine scheduling and eligibility and are encouraged to contact MST Program instructors directly, attend our January Open House or visit mst.mansd.org. for additional information.

NON-DISCRIMINATION POLICY

"It is the policy of the School Board, in its actions, and those of its employees, that there shall be no discrimination on the basis of gender, race, religion, nationality, ethnic origin, age or handicap, for employment in, participation in, or operation and administration of any educational program or activity in the Manchester School District."

Manchester School of Technology's nineteen Career and Technical programs are open to all junior, senior and certain sophomore high school students from Manchester and area high schools.

ENROLLMENT

Nearly all programs are two years in length and, upon successful completion, students are awarded four elective credits and are eligible to receive a Certificate of Completion.

[LNA, Firefighter I and EMT are scheduled differently]

Students attend the MST CTE programs daily during 100 minute block sessions. Except for MSTHS, students return to their high school for the remainder of their day.

BLOCK 1:	8:00 - 9:40
BLOCK 2:	10:00 - 11:40
BLOCK 3:	12:35 - 2:15

The priority order for selection of each Program's students is as follows:

- Returning Second Year students who successfully completed Year 1.
- New 11th grade Juniors.
- Returning students who have requested a different program.
- New 10th grade Sophomores
- New 12th grade Seniors

Over-enrolled programs will select students based upon the above priority list. A student who does not gain entry into his/her first choice will be placed on a waiting list and/or allowed a second choice, if available.

Cover design by MST Design Communication, 2022

MST Learning Beyond the Classroom

DUAL ENROLLMENT

Upon successful completion of a dual enrollment class, a student will receive both high school and college credit. These college credits are fully transferable. Articulation Agreements, Running Start and other dual enrollment opportunity options are available in many CTE programs.

ARTICULATION AGREEMENTS

Articulation Agreements allow students to earn college credit for courses they have completed as part of their high school program. Agreements are made by the high school and colleges and universities as to what courses are accepted. This streamlines the student's educational pathway by eliminating the need to take multiple courses with the same learning outcomes. Many of our CTE programs at MST have Articulation Agreements.

RUNNING START
Earn College Credit in High School!

In 1999, the New Hampshire Technical College System introduced *Running Start*, a partnership enabling high school students to enroll in Community College System of New Hampshire [CCSNH] courses at a significant reduction in tuition. The courses are offered during the school day at MST. Students who successfully complete CCSNH courses through this program can request an official transcript from the NH Community College. CCSNH courses taken through *Running Start* are accepted at NH's Community Technical Colleges and many other colleges and universities.

INTERNSHIPS

This program provides opportunities for students who have strong interest in a particular career area to explore in depth what the field has to offer him/her in relation to future career goals. Along with the internship experience, students will need to attend meetings throughout the semester and will need to complete a portfolio capturing their experience. Students interested in applying for an internship must complete an application and interview prior to placement. Applications are available in the MST Student Support and Career Center.

ONLINE LEARNING

Online learning provides a means for students to continue, expand or enhance their education. Online learning and dual enrollment classes offer students the ability to engage in opportunities to which they might not otherwise have access.

EXTENDED LEARNING OPPORTUNITY [ELO]

The ELO Program is an opportunity for students to explore and receive credit for extended learning activities outside the traditional classroom, including, but not limited to, internships, community service, independent study, private instruction, work-based learning and various other activities. The granting of credit shall be based on a student's demonstration of course competencies, as approved by certified personnel. Through reflection activities, students examine their personal goals, skills and values relating to the world of work.

The ELO program is open to everyone. Students must be able to commit to completing hours and activities that are outside their regular school hours. Students participating in the ELO program are required to meet regularly with their cooperating teacher, community partner and/or ELO Coordinator. They must also keep a regular journal and complete a final project presentation.

CAREER AND TECHNICAL STUDENT ORGANIZATIONS [CTSO]

CTSO's provide opportunities for leadership development, community service, teamwork and skill enhancement. These organizations are specifically tailored to be part of the instructional program and designed to assist students with their transition from school to their career of choice. Members of these organizations travel to state and national skill competitions and leadership conferences. These opportunities offer exciting and challenging events and students are often award winners at all levels.

SkillsUSA

Students in Cosmetology and Video & Digital Media Production programs participate in SkillsUSA.

hosa future health professionals

Students in Health Professions participate in HOSA.

FBLA

Students in Business Principles participate in Future Business Leaders of America

NATIONAL TECHNICAL HONOR SOCIETY

The National Technical Honor Society was founded as a positive means to promote high academic student achievement and to recognize students with outstanding character, leadership and service records. Membership in the National Technical Honor Society is an honor, not a position for which the student applies. A student is eligible upon completion of one full semester at MST.

MST Career and Technical Programs [CTE]

MST Automotive Technology

Automotive Technology I: 1709/1710 **2 Credits**
Automotive Technology II: 1711/1712 **2 Credits**

Do you like to work on cars? As a student in this program, you will be instructed by ASE Certified Instructors and use the best tools and state-of-the-art diagnostic equipment to develop professional Automotive skills.

Students will be trained through classroom instruction and active participation in the Automotive Lab according to the curriculum of the Maintenance and Light Repair Task List. This is part of the NATEF [National Automotive Technicians Education Foundation. As a NATEF certified program, the Automotive Technology program at MST will also include online learning components.

Second year seniors have the opportunity to participate in an internship program in a variety of area repair centers and dealerships.

PROGRAM REQUIREMENTS
$30.00 Lab fee, work boots, coveralls

RUNNING START
Earn College Credit in High School!

RECOMMENDED PREREQUISITES
Successful completion of Math, English, Science and ICT.

Kurt Beaumont kbeaumont@mansd.org
Daniel McNally dmcnally@mansd.org

MST Business Principles

Business Principles I: 1793/1794 **2 Credits**
Business Principles II: 1795/1796 **2 Credits**

Do you have a marketable skill, talent or product that you would like to introduce to the market? Perhaps you have a dream of owning your own business. Maybe you have plans to take on a family business; or you anticipate a career in retail management. Regardless, you ARE already a consumer of products and services. An understanding of the "business of doing business" is practical knowledge you are certain to use in everyday life.

Business Studies will introduce the many facets of private enterprise including:

- Small Business and Franchise Systems
- Organizational Behavior
- Product and Service Sector
- Workforce Development
- Consumer Behavior
- Business Ethics
- Management Processes
- Human Resources
- Marketing & Promotion
- Finance

1st Year: Principles of Business

In your first year, you will be exposed to business terminology and best practices. We will study various business models within our area through field trips, guest speakers, hands-on projects and research.

2nd Year: Applied Business

Utilizing our school's retail space, students will demonstrate what they have learned by making business decisions on products and promotions based on market research as well as demonstrating management skills and basic business operations needed to run a successful establishment. Students will also work on a business plan of their own. Second year students will have the opportunity to gain real life learning experiences through job shadowing, internships and collaborative projects with area businesses.

RUNNING START
Earn College Credit in High School!

FBLA

Michelle Strout mstrout@mansd.org

MST Careers in Education

Careers in Education I: 1713/1714 **2 Credits**
Careers in Education II: 1715/1716 **2 Credits**

Careers in Education at the Manchester School of Technology is a two-year Career and Technical program open to sophomore, junior and senior high school students from Manchester and surrounding area high schools. This program is designed for students who are interested in pursuing careers in the field of education.

Students will have the opportunity to obtain the needed skills in these careers through classroom lecture, demonstrations, observations, technology and instructional activities. The classroom curriculum encompasses all aspects of education which includes units in language arts, math, art, nutrition, health, safety, positive guidance techniques and development from birth to adolescence. Students also create developmentally appropriate lesson plans that are then conducted with children.

Kayla Chase kchase@mansd.org

MST Collision Repair & Refinishing Technology

Collision Repair I: 1705/1706 **2 Credits**
Collision Repair II 1707/1708 **2 Credits**

Opportunities are unlimited! Good auto body mechanics are always in demand. Collision Repair is a two-year program in which students acquire basic entry-level skills in the auto body repair trade. This comprehensive course covers basic welding, sheet metal dent repair, surface preparation and refinishing fundamentals.

Students will deal directly with customers, write estimates, schedule jobs, order parts and complete the repair process. Students progress at their own pace.

Instruction is also provided in automotive construction, identification and care of hand and power tools.

Students have an opportunity to work with professional industry equipment including a frame machine, sanders, hydraulic power tools, air compressors, grinders, a front end machine, panel cutters, MIG welders, a paint booth and many more.

RUNNING START
Earn College Credit in High School!

Keith Roberge kroberge@mansd.org

MST Cosmetology

Cosmetology I: 1729/1730 **2 Credits**
Cosmetology II: 1731/1732 **2 Credits**
Cosmetology III: 3731/3732 **2 Credits**

The mission of the program is to provide students a quality cosmetology education, by preparing students for licensing and gainful employment and/or post secondary education.

This program utilizes the most comprehensive, up-to- date principles and technology of teaching cosmetology. It offers a step-by- step, practical development of the subject matter to help lay the foundation for a better understanding of the nature of hair and skin as protein substances and the products used in professional beauty culture work. The cosmetology course of study is designed to prepare students for the state licensing examination and employment. The knowledge and skills will help prepare our graduating students to keep pace with the new techniques which are developed and to prepare the student for work as a hair designer, salon manager, hair colorist, salon owner, product demonstrator, etc. The jobs are endless in this fast, pace growing industry!

The program combines classroom theory and practical clinic hours. [1500 clock hours]

Cosmetology 1 [One block per day] 300 credit hours

Hairstyling, Infection Control, History of Hair, Professional Image, Nail Art, Special Effects Make Up, Intro to Haircutting.

Cosmetology 2 [One block per day] 360 credit hours

Manicuring, Pedicuring, Waxing, Make Up, Facials & review of all skills from year 1.

Cosmetology 3 [Two blocks per day] 900 credit hours

Haircolor, Perm Wave, Chemical Textures, Artificial Nail Enhancements, Wigs, Salon Business, Advanced Haircutting , state board prep & review of all skills from year 1 & year 2.

ELO [After school, one day per week] 100 credit hr/year

Students will perform all skills learned on clients gaining real world experience and credit hours towards certification.

PROGRAM REQUIREMENT
Purchase of personal tool kit.

ARTICULATION AGREEMENT/POSTSECONDARY OPPORTUNITIES

- NH State Board of Barbering, Cosmetology & Esthetics
- Cosmetology 1 & 2: Up to 360 credit hours transferrable to Cosmetology post secondary.
- Barber Crossover License
- Esthetics License
- Nail Technician License

SkillsUSA

Mollie Chase molliechase@mansd.org

MST Culinary Arts

Culinary Arts I: 1733/1734 **2 Credits**
Culinary Arts II: 1735/1736 **2 Credits**

The Culinary/Pastry Arts program is designed to give students the core fundamentals of each discipline which can be later built upon either through future schooling, apprenticeships or working in the field upon graduation.
Students will start their chosen career experience in an innovative lab and classroom environment that blends theory with hands-on experiences. Students will be part of a student managed dining room and bakery where they will begin to gain skills in the hospitality field.

Scholarships and merit grants are available for continuing education in this field as well as advanced standing placement in postsecondary education through articulation agreements. You can gain study credits for continued training on the job while enrolled and/or during the summer in addition to the regular school year.

CULINARY ARTS CONTINUED:

If Culinary Arts is the field you want to enter, this program offers the opportunity to learn on industry equipment, gain an understanding of the field that you have chosen before pursuing future schooling and to start on your path toward becoming a chef.

ARTICULATION AGREEMENT
Lakes Region Community College.
The Culinary Institute of America [CIA] provides scholarship opportunities to Culinary Art student completers.

Clifton McGee cmcgee@mansd.org

MST Design Communication

Design Communication I: 1737/1738 **2 Credits**
Design Communication II: 1739/1740 **2 Credits**

BUILDING CAREERS IN DESIGN

"Imagine you had a great **IDEA** and **SHARED** it with the world"

This unique course of study has been developed specifically for students considering any of the many diverse career opportunities as a design professional. The classroom/lab environment is the model of a professional design studio and represents the most current technology in equipment and resources.

The studio accommodates students at their own computer and drawing workstation where they access their electronic portfolio, work assignments, the internet and share information through the local network. The lab includes an extensive design periodical, reference and career exploration library, a modeling and reprographics area and spaces for student project presentation, critique and exhibition.

The curriculum is a reflection of the design process from problem definition to conceptualization and presentation to documentation and prototyping. Students are offered realistic learning experiences for the exploration and development of professional design skills relevant to a diversity of design disciplines including architecture, mechanical engineering, industrial design and civil engineering. Within these design contexts, students develop competency through the integration of traditional and advanced technology methods for the communication of design including sketching, technical drawing, rendering and modeling as well as digital imaging, CADD and Boundary Representation solid parametric modeling required of today's designers and students of design.

Through active engagement, students can acquire the technical skills and creative techniques necessary to compete and succeed in the pursuit of an exciting and rewarding career in design. Portfolio creation and college planning is valuable to students applying to postsecondary design schools.

DESIGN COMMUNICATION PROGRAM SKILLS

The Design Process
Freehand & Technical Sketching
The Design Views
3D Visualization
Conceptual Design
2D Composition
Digital Imaging
Raster Graphics
Rendering Techniques
Design Presentations
Industrial Design
Instrument Drafting
Geometric Construction
Mechanical Engineering Design
B-Rep Solid Modeling
Engineering Technical Plans
Reverse Engineering
3D Printing/Prototyping
Vector Graphics
3D Composition
Architectural Design
Civil Engineering Design
Architectural Technical Plans
Frame Building Construction
BIM Modeling
Physical Modeling
Design Animation
3D Scanning
Laser Cutting & Engraving
Design Portfolios

PREREQUISITES
Successful completion of Algebra I
Successful completion of, or currently enrolled in, Geometry

ARTICULATION AGREEMENT
NH Technical Institute: ARET 103-C

Stephen F. Koziatek skoziatek@mansd.org

MST Electrical Technology

Electrical Technology I: 1761/1762 **2 Credits**
Electrical Technology II: 1763/1764 **2 Credits**

Students in the Electrical Technology program learn the fundamentals of electrical circuitry and the laws that govern electricity. This course includes electrical theory, electrical building code, safety practices and installation techniques. The program goes beyond typical high school expectations as industrial motor control and programmable logic control work stations are available for advanced students.

Many graduate students have gone on to postsecondary schools in either a two-year technical college program or a full degree program in electrical engineering. In addition, Program completion eliminates the first year of the four-year apprenticeship program.

PROGRAM REQUIREMENTS

Mandatory $30.00 Electrical Apprenticeship License fee paid to the State of NH.

Required $5.00 locker deposit.

Mark LaFlamme mlaflamme@mansd.org

MST Emergency Medical Technician - Basic

EMT I, II: 1812-01, 02 **2 Credits**

The Basic EMT Program is a 200+ hour entry level medical training program that includes 10+ hours of required clinical time in the emergency room or riding along in an ambulance. Students successfully completing will be eligible to take the National Registry Exam, a pre-requisite for any advanced EMT or Paramedic program. Students will experience the many branches of the health care system relevant to basic certification. The curriculum includes airway management, oxygen therapy, patient assessment, medical emergencies, traumatic injuries, special patient populations and EMS operations. Students who have successfully completed the Program must be eighteen to take the National Registry Examination.

PROGRAM REQUIREMENT
EMT-Basic is offered during second semester only and as a one-semester, two block/day course. [8 AM - 11:45 AM]

ARTICULATION AGREEMENTS
Lakes Region Community College
New Hampshire Fire and EMS Academy
Elliot Hospital

Leo Roy leoroy@mansd.org

MST Fire Science

Fire Science I, II: 1807-01, 02 **2 Credits**

Fire Science is a certificate program through the New Hampshire Fire and EMS Academy (NHFA), and follows the rules and regulations set forth by NHFA. Upon successful completion, students will receive FFI certification, which includes CPR, First Aid, Wildland Firefighter, Hazmat Awareness, and Hazmat Operations. Each being a prerequisite for taking the FFI final exam. The FFI Certificate is Pro-Board through NHFA and is recognized in thirty-seven other states and four other countries.

PROGRAM REQUIREMENT
Fire Science is offered during first semester only and as a one-semester, two block/day course. [8 AM - 11:45 AM]

Leo Roy leoroy@mansd.org

MST Game Design

Game Design I: 1741/1742 **2 Credits**
Game Design II: 1743/1744 **2 Credits**

Video Game Design provides students with the opportunity to design, program, and create fully functional video games. The program introduces basic programming and design skills that are essential to developing a video game. Students in this program develop skills in two-dimensional and three-dimensional design, traditional and block programming, game physics, game theory and psychology. Students learn to use game industry software that includes GIMP, Blender, MS Visual Studio and the newest Unreal Engine 4 system. Using these skills, as well as conceptual writing and drawing, students develop a foundation that will aid them through the next levels of their own epic quests.

ARTICULATION AGREEMENT
New England Institute of Technology.

PREREQUISITES
Successful completion of Algebra I
Successful completion of, or currently enrolled in, Geometry

Parker Johnstone pjohnstone@mansd.org

MST Green Technology/Landscape Design

Green Technology I: 1749/1750 **2 Credits**
Green Technology II: 1751/1752 **2 Credits**

The Green Technology program is designed for students wishing to become employed in or pursue a degree in the "green" industry. The content was developed to accommodate a demand, locally and globally, for educated environmental professionals. This program is designed for individuals interested in entering an educational and/or career related to the natural environment, which includes the following areas of study:

- Forestry
- Landscape design/construction and management
- Wetland science
- Landscape architecture
- Urban planning
- Environmental technology or environmental conservation

The program covers a blended curriculum combining coursework in natural science and technology and design, and in doing so provides the foundational framework for those wishing to pursue an education or career in an environmental related industry. Through practical, hands on experience, combined with coursework, students will develop knowledge and appreciation of the connection between the natural and designed environment.

Through active participation in the design and construction of two homes and the management of our greenhouses, this real world application allows students to demonstrate their understanding of sustainable practices. The Green Industry is one of the fastest growing employment sectors in New England and this program will prepare students to excel in this emerging industry.

Recent graduates from this program have established their own horticultural enterprises and others continue their education toward a two or four-year degree in areas such as sustainable agriculture, horticulture, sustainable design and landscape architecture.

ARTICULATION AGREEMENTS
NH Technical Institute
U-Mass Amherst Stockbridge School

Kevin McDonnell kmcdonnell@mansd.org

MST Health Professions

Health Professions I: 1745/1746 **2 Credits**
Health Professions II: 1747/1748 **2 Credits**

This program introduces students to professional health care careers found within the diagnostic, therapeutic, environmental, biomedical, and information services clusters. Career pathway exploration, on an individual student level, continues throughout the two-year program. At the same time, the incredible scientific world of medicine is investigated. Anatomy & Physiology, Pathophysiology, & Medical Terminology are just a few of the topics covered.

Students master hands-on skills including infection control techniques, worker and patient safety, first aid and CPR, measuring and recording vital signs, vision and hearing screens and 21st Century skills. Students gain real-world experience by participating in a joint, off-site simulated mass casualty incident. Public Safety and Law students process the crime scene while the HS&T students triage & treat the victims.

The Licensed Nurse Assistant (LNA) program of the NH Board of Nursing is an option for sixteen HS&T II students each year. HS&T students may elect to earn college credit through Running Start in Medical Terminology, Exercise Science or Medical Law & Ethics.

All students are encouraged to climb the ladder to job security through one, two, and four-year and beyond post-secondary institutions majoring in specialties such as dental hygienist, nurse, physical therapist, radiologic technician, surgical technician, vet technician, pharmacist technician/pharmacist, paramedic, and physician assistant.

ARTICULATION AGREEMENT
NH Technical Institute Orthopaedic Technology program.

RUNNING START
Earn College Credit in High School!

hosa future health professionals

Sharon Gelinas sharongelinas@mansd.org
MaryBeth Murphy marybethmurphy@mansd.org

MST HVAC

HVAC I: 1897/1898 **2 Credits**
HVAC II: 1899/1900 **2 Credits**

In HVAC I students learn about each individual component of a Beckett oil burner, how it functions and will completely assemble and wire it. Students are exposed to different hydronic heating systems and how to install them efficiently. Additional skills include the proper installation of an oil tank, how to thread black pipe and learn all the different components required and necessary to pipe and wire a hydronic forced hot water boiler system.

In HVAC II, students learn all about series and parallel circuits and the wiring of a complete split A/C system. Additional skills include duct work installation, proper piping techniques (silver soldering with oxy/acetylene and nitrogen), charging and startup.

The HVAC program is also designed to expose students to the proper use of hand and power tools used in the HVAC industry.

ARTICULATION AGREEMENT
Manchester Community College

Donald Seward dseward@mansd.org

MST Manufacturing & Aviation Technology

Manufacturing Tech I: 1909/1910 **2 Credits**
Manufacturing Tech II: 1911/1912 **2 Credits**

In today's constantly changing world, it is essential to possess a variety of transferable skills. The Manufacturing Technology program is designed to do just that, giving motivated students a wide variety of knowledge and skills based upon which to embark on a manufacturing career. These skills will help the student prepare for post -secondary education or enhance the opportunity for employment in local industry.

The MST Manufacturing Program has developed an internship program with local industries such as WireBelt USA, Velcro USA, and BAE Systems, local companies with a need for well trained highly skilled and highly paid employees.

Students in Manufacturing and Welding Technology engage themselves in exciting and motivating high technology projects including the design and construction of a hover craft, smart house security system, automated hydroponic gardening, an automated can crusher, the design and fabrication of an ergonomic workstation, a solar powered car and many others that are school and community-based. Upon successful completion of Manufacturing Tech I, students may elect to work on airplane manufacturing.

TECHNOLOGY SKILLS
Welding, Sheet Metal, AC/DC Electricity, SolidWorks Design, Pneumatics, CNC-Controlled Plasma Cutting and Milling, Pneumatic Systems, Robotics, Measurement Tools, CNC-Controlled Lathe, Blueprint Reading. The Aviation program includes physics.

ARTICULATION AGREEMENTS
Manchester Community College
NH Technical Institute
Central Maine Community College

Daniel Cassidy dacassidy@mansd.org

MST Public Safety/Law

Public Safety/Law I: 1769/1770 **2 Credits**
Public Safety/Law II: 1771/1772 **2 Credits**

This program introduces students to the fields of policing, criminology, forensics and firefighting. We will review the historical underpinnings of the modern day study of police standards and the importance of forensic science in our society.

PUBLIC SAFETY/LAW CONTINUED:

Students will examine the theoretical causes of crime and criminality and study the response of society to crime. Students will be introduced to criminal law and procedures, crime scene investigations and court functions. In the Program, students will develop personal skills such as human relations, basic rights, responsibilities and communication.

CAREER PATHS

- Corrections
- Probation and Parole
- Security & Protective Services
- Fish&Game
- Legal Services
- Court Reporter
- Sheriff
- Paralegal
- Dispatch
- Customs Inspector
- FBI
- DEA
- State & Local

ARTICULATION AGREEMENTS

NH Technical Institute
Husson University
Great Bay Community College

Maureen Dobmeier mdobmeier@mansd.org

MST Residential Carpentry

Residential Carpentry I: 1757/1758 **2 Credits**
Residential Carpentry II: 1759/1760 **2 Credits**

The Residential Carpentry program provides a firm foundation of basic carpentry skills while providing real-world experiences for students to explore. The skills you learn can be used to bulid your own garage, a deck or an addition to your house. There will always be a need for carpentry, whether it's building a structure or doing finish work inside.

This course will provide you with the experience you will need to be hired as a carpenter when you graduate. If you're planning to go on to a technical school or college, the skills that you develop in this Program can lead to profitable employment during your summer vacations.

Scott Lawlor slawlor@mansd.org

MST Residential Plumbing

Residential Plumbing I: 1765/1766 **2 Credits**
Residential Plumbing II: 1767/1768 **2 Credits**

In Plumbing I, students will be exposed to the hand tools, power tools and piping material [PVC, PEX, copper] required to completely install the plumbing within a residential structure. Students will also learn how to hard and soft solder using oxy/acetylene, acetylene, liquid propane and mapp. Plumbing students work with other MST construction students to completely construct a house in our nearby subdivision every year. There, you participate in the installation of all the plumbing phases within that home according to the New Hampshire Plumbing Code requirements.

In Plumbing II, students will be introduced to different hydronic heating systems, both oil and gas fired. Students will learn how oil burners operate and the function of each component within that burner as well as the proper way to wire the various primary controls.

In addition, students participate in the complete installation of a forced hot water oil fired [oil tank] heating system including all piping and electrical requirements of the home.

Students may apply up to 720 hours of the Programg toward the New Hampshire Plumbing Apprenticeship Program.

Donald Seward dseward@mansd.org

MST Video & Digital Media Production

Video & Digital Media Production I: 1777/1778 **2 Credits**
Video & Digital Media Production II: 1779/1780 **2 Credits**

This program is designed to give you practical experience with professional video, audio, television, and design technology to prepare you for a career in digital media. If you are interested in a career in film, television, audio design, or effects animation, you will love our state of the art Mac editing lab, sound recording studio, and 4k television studio. We use the latest software, including Adobe Creative Suite, Final Cut Pro, Motion, and Logic Pro. You will work individually and in teams to conceptualize and create various projects, short films, pod-casts, animations, music videos, sound design projects, movie trailers, and more. By the end of the two year program you will be prepared for a career in a variety of digital media fields and be given opportunities to earn college credit, build a professional reel and resume, and earn professional industry recognized certification.

CAREER PATHS

- Producer
- Director
- Video Editor
- Audio Engineer
- Audio Editor
- Gaffer
- Cinematographer
- Camera Operator
- Lighting Technician
- Screenwriter
- Broadcast Engineer
- Photographer
- Graphic Designer
- Graphics Animator

ARTICULATION AGREEMENTS

UNH Manchester
New England School of Communications
Hussin University
Great Bay Community College

Christopher Lord clord@mansd.org

Manchester School of Technology High School

In support of the District's goals, MST High School has a unified commitment to excellence in meeting the educational needs of individuals in the Manchester School District through an innovative 21st century competency-based, project-based learning curriculum. This curriculum ensures that each student is career ready or prepared to matriculate at a two or four-year college upon graduation.

MSTHS COURSE OF STUDY COMPONENTS

- Project Based Learning
- Competency Based Assessment
- A Career and Technical Education integration of academics
- Opportunities to earn college credits through Running Start, Articulation Agreements and Early College.
- Accelerated Pathway: A student may complete high school in three years or take as much as five years through an Individualized Learning Plan
- 1:1 Device Model: Computer technology is used along with traditional textbooks. Students are taught that the computer is a critical and vital component for 21st century learning and their career.
- Participation in internships, job shadowing and Extended Learning Opportunities for which credits will be awarded.

English

College Comp: 3192 [1 Credit]

This course is designed for students interested in improving their expository writing skills and completing college-level work. The course will emphasize both critical responses to a variety of readings and the writing process, culminating in a portfolio and self-reflections.

Creative Writing: 3130 [1 Credit]

Creative Writing is for serious writers who want to challenge themselves. In a search for individual style and technique, students will write prose and poetry, focusing upon continuity and coherence. Students must meet the demands of the writing process: brainstorming, outlining, drafting, editing, critiquing, conferencing, presenting and reading. The class will culminate in a portfolio and self-reflections.

Film Literature: 3194 [1 Credit]

Film Literature studies the varied ideas and concepts that interact when written literature is adapted to film or when a work of literary art is originally conceived for film presentation. This course includes: (1) the impact of film on perception of the human condition, (2) the ways in which the roles are adapted and reflected in film and literature (3) visual interpretations and application of literary techniques and auditory language, (4) a history of film and genres (5) the differences and special attention necessary to present the work. Students are given opportunities to develop screen plays and movie trailers. Students also have frequent project based assessment in which they explore and analyze specific film genres.

[MSTHS Juniors and Seniors]

Health/Physical Education

Health Education: 3131 [.5 Credit]

The topics covered support the seven required competencies for Health Education. Instruction in Health Class is modeled after the "Wellness Concept." Grades are determined by the satisfactory and timely completion of assignments.

Physical Education: 3129 [1 Credit]

The topics and activities covered support the required competencies for Physical Education. Instruction for Physical Education is modeled after the "Wellness Concept". Grades are determined by the satisfactory and timely completion of assignments.

Humanities

Humanities I: 3280 [2 Credits]

This team-taught, interdisciplinary course challenges students to understand the development of societies around the world. The development of civics resulting from the growth of complex societies will be examined. Students are required to work collaboratively on group projects and presentations, write extensively and present orally. Grammar, vocabulary development, literary analysis and basic research methods will be the focus of the instruction.

1.0 credit in English and 1.0 credit in Social Studies [.5 World History, .5 Civics]

Humanities II: 3281 [2.5 Credits]

Prerequisite: Successful completion of Humanities I

Humanities II covers United States History and Economics. American History was and is an intense and dynamic series of developments that shaped our nation. America has been formed and shaped through social interaction both inside this country and outside its borders. Humanities II focusses on what has happened within US boarders that have helped form America into what it is today. This course will examine the processes that made our modern world. To go into detail of the historical period we will be reading several books that expose, express and explain the time period and why it was important. History informs literature so we will use literature to inform history. In order to be successful in this class, students must be able to read books, short stories, pamphlets and explain how history affected the writing and then how the writing affected history.

1.0 credit in English and 1.0 credit in U.S History and .5 Economics

Humanities III: 3283 [2 Credits]

This team-taught, interdisciplinary course examines people, their locations around the world and the various written genres that represent them. Cultures, how people relate to each other and the influence of physical geography on those relationships will be examined. Students will be required to work collaboratively on group projects and presentations, write extensively, and present orally throughout the course. Critical analysis, thinking skills, and research methods will be emphasized, and embedded in a variety of assessments. Extensive reading is required.

1.0 credit in English and 1.0 credit in Social Studies [.5 Geography. 5 Sociology]

Psychology: 3168 [1 Credit]

Psychology is the study of the mind and behavior. In this class students will learn how the brain functions, what parts of the brain control what actions, and the processes in which the brain works. This class will be student driven with a focus on individual studies, presentations and work. Since Psychology studies such a wide ranging field of functions I will allow students to find the field in which they are most interested, and learn about that topic with depth and detail.

Mathematics

Algebra IA: 3230 [1 Credit]

The pacing in Algebra IA allows for the reinforcement of basic skills while providing the foundations of algebra. Following Algebra IA, students may progress to Algebra IB. The Algebra IA and IB sequence fulfills the algebra requirement for graduation. Topics include order of operations; operations on rational numbers; evaluating and simplifying expressions; data analysis; solving linear equations and inequalities in one variable; rates, ratios, and proportions; applications of percents; probability; graphing linear functions. Problem-solving and critical thinking skills are incorporated throughout the course.

PREPARATION FOR THIS COURSE: Students should be able to perform basic operations on rational numbers.

Algebra I: 3109 [1 Credit]

Self-paced course covering topics including operations with real numbers, solving linear equations and inequalities, graphing in a coordinate plane, functions, polynomials, simplifying rational expressions and solving quadratic equations. Successful students gain competence in the areas of algebraice expressions, equations and inequalities and functions and relations through traditional individual assessments, individual projects and group projects.

Algebra II: 3113 [1 Credit]

Prerequisite: Successful completion of Algebra I
A combination of direct instruction, presentations, cooperative learning, and project-based learning will be used in this course covering equations and inequalities, exponents and radicals, exponential and logarithmic functions, and an introduction to trigonometry. Graphing calculators may be used throughout the course. Successful students gain competence in the areas of algebraic expressions, equations and Inequalities and functions and relations through traditional individual assessments, individual projects and group projects.

Business Math: 3177 [1 Credit]

A combination of direct instruction, presentations, cooperative learning and project-based learning will be used in this course including credit cards, loans, insurance, investments, personal business, product production, purchasing, sales, marketing, warehousing and distributing services, accounting, records, financial management and corporate planning. Successful students gain competence in the areas of business applications, data, equations and inequalities and rates through traditional individual and group assessments and projects.

Pre-Calculus: 3176 [1 Credit]

This course provides the foundation for a calculus course. It extends knowledge of graph analysis, geometry, trigonometry, logarithms, exponential functions, and sequences and series. A graphing calculator will be used throughout the course. Students who successfully complete this course will be prepared to take Advanced Placement Calculus AB. A combination of independent, cooperative, and project-based learning will be used in this course. Grades will be determined by the satisfactory completion of summative assessments that demonstrate competencies in the areas of functions and relations, equations and inequalities, trigonometric functions, statistics and probability.

Calculus: 3197 [1 Credit]

Prerequisite: Successful completion of Pre-Calculus.
This course is devoted to topics in differential and integral calculus and covers topics such as limits, derivatives, and integrals both with and without a graphing utility. The course teaches students to approach calculus concepts and problems when they are represented graphically, numerically, analytically, and verbally and to make connections among these representations.

Geometry: 3111 [1 Credit]

This self-paced course includes topics of fundamental geometry concepts including parallel lines, triangles, quadrilaterals, other polygons, similarity, congruence, circles, perimeters, areas, volumes and an introduction to basic trigonometry. Successful students gain competence in the areas of geometric properties, similarity, congruence and measurement through traditional individual assessments, individual projects and group projects

Science

Biology: 3117 [1 Credit]

This required course is designed as an overview of selected biological topics. The course should be considered foundational to further study in the life sciences, such as nursing, biotechnology, ecology, and forensics. Biology will utilize extensive lab work for demonstration of and experimentation with biological concepts. The course may also incorporate long-term projects, interdisciplinary projects, and possibly joint projects with CTE classes. It should be considered a “lab science” for the purposes of college admissions.

Biotechnology: 3164 [1 Credit]

Prerequisite: Successful completion of Biology.
This intense elective course is designed as an introductory study of DNA science. It will necessarily include challenging molecular biology and cell chemistry. The focus of study will be on DNA structure & function; DNA replication, transmission, & translation; manipulation of DNA: genetic engineering; current applications of DNA science; proteins; and bioinformatics. Extensive lab work will be integral to the course and will include bacterial transformations, restriction enzyme analysis of DNA, plasmid manipulation, DNA “fingerprints”, computer-based bioinformatic studies, and PCR demonstration & experimentation.

Chemistry: 3163 [1 Credit]

Prerequisites: Successful completion of Physical Science and Biology. Students must be enrolled in Algebra II or higher concurrently.

The course is a survey of the qualitative and quantitative concepts associated with matter and energy. This lab course emphasizes the mathematical applications to atomic theory and energy relationships [required for college and some CTE programs.]

SCIENCE CONTINUED:

Physical Science: 3116 [1 Credit]

This course will prepare students for biology and further study in science. It is a survey of physics and chemistry. The topics covered are matter, energy, motion and force with the applications to CTE programs. The program includes topics from earth/space science that relates to technology and the application of technology to solve problems in the environment and industry.

Physics I: 3198 [1 Credit]

Prerequisites: Successful completion of Algebra I and Geometry.
In this course, the concepts of space, mass-energy, the scientific method, measurement theory, motion and force, heat and the structure of matter, and wave phenomena, including sound, light and electromagnetism, will be learned. Laboratory work further clarifies the concepts discussed in class.

World Language

French I: 3165 [1 Credit]

This is a moderately-paced elementary course for students who have no knowledge of French. Students work to attain proficiency on the skills of listening, speaking, reading and writing. Students learn basic vocabulary and grammatical structures as well as basic pronunciation. This course also includes study of typical customs and geography of the French-speaking world. As the course progresses, students are expected to apply and demonstrate their skills on a daily basis.

French II: 3167 [1 Credit]

Prerequisite: Successful completion of French I.
Strong basic skills are required for success in this course. This course is designed to increase student proficiency in French. Students strengthen their abilities in the skills of reading, writing, speaking and listening. The course also includes the study of the customs, geography and history of Francophone countries. This course builds on previously acquired knowledge from French I.

Latin I: 3221 [1 Credit]

Latin I is an introduction to the language, including 1st and 2nd declension nouns, present tense, future tense and perfect tense verbs. Roman culture and mythology are also be explored.

Latin II: 3222 [1 Credit]

Prerequisite: Successful completion of Latin I.
Latin II is more advanced and concepts learned include imperfect tense, active and passive voice, transitive and intransitive verbs, perfect participle and third declension nouns.

Spanish I: 3223 [1 Credit]

Students work to attain proficiency on the skills of listening, speaking, reading and writing. Students learn basic vocabulary and grammatical structures as well as basic pronunciation. This course also includes study of typical customs and geography of the Spanish-speaking world. As the course progresses, students are expected to apply and demonstrate their skills on a daily basis.

Spanish II: 3255 [1 Credit]

Prerequisite: Successful completion of Spanish I.
This course is designed to increase students proficiency in Spanish. Students will strengthen their abilities in the skills of reading, writing, speaking and listening. The course also includes study of the customs, geography and history of Spanish-speaking countries. This course builds on previously acquired knowledge from Spanish 1.

English Language Learners

EL Beginner: 3205 [1 Credit]

A course designed for English learners (EL) with beginning level English language proficiency (WIDA 0-2.9). This course is an intensive English class with a focus on development of both basic social communicative language and cognitive academic language. Students practice language across the content areas for a variety of communicative and academic purposes.

EL Intermediate: 3207 [1 Credit]

A course designed for English learners (EL) with intermediate levels of English language proficiency (WIDA 3.0-3.9). This course will focus on development of academic English vocabulary in projects that require public speaking and writing for real audiences/purposes. Students will continue to develop reading skills in English.

EL Advanced: 3209 [1 Credit]

This course serves as support for advanced EL students (WIDA >4.0) who are simultaneously taking rigorous academic courses required for graduation. Students who take EL Advanced expand their academic vocabulary across a range of content areas. Students explore their linguistic and cultural heritage and connect this to the civic and economic life of their community in individual and collaborative projects. This course emphasizes application of academic language in writing, research, and with authentic projects.

Manchester School of Technology/MST High School
Program of Studies **2022-23**

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