

# TECHNOLOGY DEPARTMENT

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The Technology Department offers opportunities for students to explore careers, learn practical skills or master career skills. Students are encouraged to master skills in Construction, Drafting, Engineering, Media & Video Production, or explore the world of technology and learn a variety of life skills. The program and course content are student centered and is designed to develop insights and understandings of the application of technological concepts, processes, and systems. All activities use hands-on experiences to motivate students to make connections between concepts and real-world applications. Students are challenged to use the technology education facility to design, apply materials, machines, instrumentation, processes, and technical concepts in an efficient and safe manner.

### MEDIA AND VIDEO PRODUCTION

**One-half Credit**

**One-half Year**

This course provides an introduction to news, media, and digital communication through hands-on work in filmmaking and communication arts. Students will produce, direct, film, and edit low budget video projects while learning to use Final Cut Pro for video and audio editing. They will also explore advertising, graphic design, photographic manipulation, and motion graphics using software such as Adobe Photoshop, Adobe After Effects, and GarageBand. Major communication technologies including radio, television, film, and telecommunications will be examined to build a strong foundation in media literacy. Throughout the course, students will develop a professional digital media portfolio showcasing their multimedia work.

### TELEVISION STUDIO

**One Credit**

**One Year**

This course will be a study of the principles of writing news and information for Radio, TV, Podcasts, and Livestreaming. Basics of television news and broadcast style will be discussed and practiced. Emphasis is placed on the fundamentals of television studio production. Production and direction of multi-camera studio television programs, as well as field packages and multi-camera field direction will be covered. This course provides a bridge between production and engineering. It emphasizes the importance of understanding technical processes as they apply to creative decisions. Students will gain practical experience in media news gathering, working as part of a team to produce news reports and complete newscasts. Students will create a digital portfolio to display all their work.

### COLLEGE ARCHITECTURE (FARMINGDALE STATE COLLEGE)

**One Credit**

**One Year**

This course is an introductory study of the theory, history, principles, and practice of architecture. Basic principles of architectural analysis, criticism and aesthetic principles will be studied. Including the roles and responsibilities of the design professions, including interior design, landscape architecture, urban planning, and engineering and how they relate to each other. Design concepts analyzed through graphical representation and modeling. Students will design fully functional prototypes and create models of homes and generate construction plans via CAD software. Fundamentals of Computer Aided Drafting (CAD) introduces concepts, techniques, and procedures necessary to facilitate a basic functional understanding of Autocad and TinkerCAD software. Students will create a digital and physical portfolio to display all their work.

- 1 HS Credit - (3 Credits through Farmingdale State is paid directly to the college) **\*This course allows students to earn 3 college credits when enrolled in this dual enrollment course. ARC 101 Introduction to Architecture and Construction (SUNY Farmingdale).**

### COLLEGE CAD

**One-half Credit**

**One-half Year**

The instructional program for CAD introduces high school students to the essential core topics for working with the AutoCAD software. The teaching strategy is to start with a few basic tools that enable the student to create and edit a simple drawing, and then continue to develop those tools. More advanced tools are introduced throughout the class. Not every command or option is covered, because the intent is to show the most essential tools and concepts, such as: Understanding the AutoCAD workspace and user interface, Using basic drawing, editing, and viewing tools, Organizing drawing objects on layers, Inserting

reusable symbols, Preparing a layout to be plotted and Adding text, hatching, and dimensions. Students will also be introduced to TinkerCAD which is an easy, browser-based 3D design and modeling tool for all. TinkerCAD allows users to imagine anything and then design it in minutes.

- 1/2 HS Credit – (MET105 | **1 Credit through Farmingdale State is paid directly to the college**)
- STEAM Academy
- **Fulfills the Computer Literacy Requirement for Graduation**

## **COLLEGE ENGINEERING**

### **One Credit**

**One Year**

The instructional program for Engineering introduces high school students to the fundamentals that engineers will need during their career and the skills that they need to be successful in a post-secondary setting. The purpose of this course is to introduce the student to the field of mechanical engineering through an exposition of its disciplines, including structural analysis and mechanism design using principles and methods of analysis. Projects will begin with conceptualization, proceed with the analysis of candidate designs, and culminate in the construction and testing of a prototype. The creative process will be encouraged throughout. Students will develop a strong set of fundamentals and the recognition of the need for and the ability to continually learn. The curriculum focuses on what mechanical engineering is all about: analysis, design, and manufacture of systems. Concepts in mathematics, science, and engineering will be continuously focused on during analysis, design and manufacturing. Additionally, they will become adept in the use of professional supplies and history. Work-related scenarios including design research, professional communication methodology, and mathematical analysis will prepare them for continuing their education in a college level engineering program. A portfolio will be developed through the course.

- 1 HS Credit - ( MET215 | **3 Credits through Farmingdale State is paid directly to the college**)
- STEAM Academy

## **COLLEGE ROBOTICS**

### **One-half Credit**

**One-half Year**

The instructional program for Robotics introduces high school students to basic programming as well as problem solving strategies. This course will involve students in the development, building and fabrication of robotics chassis. Students will work hands-on in teams to design, build, program and document their progress. Topics may include motor control, gear ratios, torque, friction, sensors, decision-making, propulsion systems and locomotive systems.

- 1/2 HS Credit - ( MET215 | **3 Credits through Farmingdale State is paid directly to the college**)
- STEAM Academy

## **COLLEGE TECHNICAL DRAWING AND CAD**

### **One-half Credit**

**One-half Year**

The instructional program for Technical Drawing and CAD introduces high school students to the fundamentals of technical drawing and computer aided design (CAD). Students will apply traditional drafting techniques, such as ortho-graphic projection, dimensioning, and tolerancing, through 2D CAD software. This course is designed to build a strong foundation in the practices and principles of technical drawing that includes a brief unit on the routines of engineering and drafting department customs, standard engineering and drafting terminology, use and care of drawing equipment, instruments and materials, the alphabet of lines conventions, the use of various measures (scales), and freehand sketching and lettering. The student gains practical experience in geometric construction, size and shape description, projection methods, sectional views, auxiliary views, pictorial views and dimensioning.

- 1/2 HS Credit - (MET105 | **1 Credit through Farmingdale State is paid directly to the college**)
- STEAM Academy

## **BASIC WOODWORKING**

### **One-half Credit**

**One-half Year**

Get ready to roll up your sleeves in this hands-on, beginner-friendly woodworking course! You'll gain practical experience using both hand tools and machines to cut, shape, and assemble your own wooden projects. Along the way, you'll learn key construction skills like measuring, joinery, fastening, and finishing to ensure your work is both durable and well-crafted. Projects may include custom bookcases, board

games, Adirondack chairs, and more, all designed to build your skills and show how pros bring designs to life. Whether you're into design, engineering, or just love working with your hands, this course will prepare you for the challenges of Advanced Carpentry.

### **ADVANCED CARPENTRY**

**One-half Credit**

**One-half Year**

Take your carpentry skills to the next level in this hands-on course! You'll build on your woodworking basics with advanced tools, techniques, and real-world construction projects. Learn precision measuring, advanced joinery, strong fastening methods, and high-quality finishing while working with everything from hand tools to heavy-duty machines. In partnership with New York State Parks, you'll help design and build equipment for ocean lifeguards like deadman boxes, sheds, signs, and barricades, offering real-world experience and community impact. Whether you're into construction, engineering, or simply enjoy building, this course will boost your skills and confidence.

### **STAGE CRAFTS AND ENTERTAINMENT TECHNOLOGY**

**One Credit**

**One Year**

**Grades 9 – 12**

The Motion Picture, Television, Theater, Theme Park and Cruise Ship industries, amongst others, all need people knowledgeable in the field of Stage Crafts and Entertainment Technology. This class is for students who like creative problem solving and who aspire to work with their hands, have artistic and carpentry talents, like to work within a collaborative group, and love the magic of bringing a production to life. The class will design and build scenery, and design and operate lighting for Baldwin High School's three shows - including how to operate computer controlled intelligent lights. Additionally, technology used in television, film and amusement parks will be covered. The class will go on one or more field trips to visit backstage at the Metropolitan Opera House, and/or see behind the scenes of a Broadway show before watching the show. Course may be repeated for credit.

### **COMPUTER PROGRAMMING & APPLICATIONS**

**One-half Credit**

**One-half Year**

This course will provide an introduction to computer science in the context of scientific, engineering, and commercial applications. The course will teach basic programming logic and problem-solving techniques for practical issues and will prepare students to use computers effectively for applications in computer science, engineering, robotics, and other disciplines. Topics include hardware and software systems with an emphasis in basic programming in Visual Basic, C + + and use of Arduino and raspberry pi boards.

- 1/2 HS Credit - (**MET109 | 2 Credits through Farmingdale State is paid directly to the college**)
- STEAM Academy

### **INTRODUCTION TO THE WORLD OF DRONES**

**One-half Credit**

**One-half Year**

Are you interested in learning how to pilot and become certified as an FAA Drone Pilot? This course is designed to provide students with the knowledge and real-world experiences which will allow them to learn basic flight operations, industry applications, and the latest FAA policies for drone aircrafts to prepare them to take the FAA pilot certification exam. Students will be utilizing the Zephyr Flight Simulator as well as logging indoor & outdoor flight time using the DJI Tello and Autel EVO II drones.

### **COLLEGE 3D DESIGN AND ENGINEERING TECHNOLOGY (Nassau Community College)**

**One-half Credit**

**One-half Year**

This introduces advanced topics in computer graphics. Students will learn 3D solid modeling based on parametric constraints, dimensions, and features such as extrude, revolve, sweep, loft, hole, fillet and shell. The course also teaches students how to create assemblies and 2D technical drawings from 3D models. Laboratory exercises will be assigned to the students for hands-on experience with the related topics. **\*This course allows students to earn 2 college credits when enrolled in this dual enrollment course. ENS 106- Computer Aided Drafting (Nassau Community College).**