

INDUSTRIAL TECHNOLOGY AND ENGINEERING

Similar to our computer curriculum, GSA's technology curriculum seeks to provide personal and life skills in a variety of areas of interest as well as develop some students' skills to the point of preparing them for more advanced technical training programs.

Engines	Engine Tech, Advanced Engines, Transportation Technology
Woodworking	Woodworking I & II, Advanced Woodworking, Residential Construction, Home Repair and Maintenance, Boat Building
Engineering and Drafting	Drafting, Architectural Design, Pre-Engineering
Technology	Introduction to Technology, Introduction to Metals, Design and Engineering Technology, Digital Fabrication

811 WOODWORKING I, 9-12 (½ credit)

Prerequisites: None.

This course covers the safe use and care of hand and power tools. Students make assigned projects in wood with emphasis on accuracy, safety and a finished quality. Woodworking I can be followed by Woodworking II.

830 WOODWORKING II, 9-12 (½ credit)

Prerequisites: Woodworking I.

This course is a continuation of Woodworking I with much more emphasis placed on the design, construction, and completion of assigned projects. Safety and housekeeping are stressed. Students pay for project materials not found in the shop. Woodworking II can be followed by Advanced Woodworking with permission of instructor.

837 BOATBUILDING, 9-12 (½ credit)

Prerequisites: None.

This is a hands-on class. Noise and sawdust will be made, screws will be driven, wood sawn and shaped, parts carefully fitted, epoxy strategically applied – and all will be finished well. Students will work in small teams to build either a 14-foot fisherman's rowing/outboard skiff or a 12-foot racing/ training sailboat, each built using modern wooden boat construction materials and techniques. In this class students will learn by doing, discover how to work together, acquire critically useful tool skills and techniques, and learn about the math, science, engineering, and art in boat design and construction.

838 RESIDENTIAL CONSTRUCTION, 11-12 (½ credit)

Prerequisites: None.

In this course students become familiar with basic construction techniques from asphalt shingles to z flashing. Emphasis is placed on accuracy in cutting and assembly, safety in the work place, and respect for one's own work and the work of others. This is an outdoor class offered second semester.

840 HOME REPAIR & MAINTENANCE, 10-12 (½ credit)

Prerequisites: None.

This course will provide students with the basic information needed to safely use hand tools, power tools, some machines, and assorted building materials. This program will give students hands-on activities to learn about repairs and maintenance necessary in the areas of cutting tools, plumbing, electrical wiring, masonry, painting and finishing.

841 DRAFTING, 9-12 (½ credit)

Prerequisites: None.

This course introduces students to the basic use of the tools used to design any product made by mankind. You will learn how to set up basic lettering used in any graphic communication, develop pictorial drawings, pattern development, multi-view drawings and dimensioning. Architectural Design may follow this course.

842 ARCHITECTURAL DESIGN, 11-12 (½ credit)

Prerequisites: Drafting or Art 1.

This course will give students a basic understanding of good house design. Each student will develop a full set of house plans and will build a scale model from their plans. This course meets one-half of the Fine Arts requirement.

843 ADVANCED WOODWORKING, 11-12 (½ credit)

Prerequisites: Woodworking II and permission of the teacher.

This is a contract course. Students who enroll design and construct their own project. Emphasis is placed on good design principles, quality of workmanship, and proper work habits. Students must pay for their own supplies not found in the shop.

844 PRE-ENGINEERING, 11-12 (½ credit)

Prerequisites: Drafting, or as co-requisite.

In this course students learn to apply principles of engineering, science, math, and technology to solve complex, real-world problems. Students will focus on the process of defining and solving a problem. They learn how to apply STEM knowledge and skills to problems they are presented, while designing and testing the solution with hands-on experience. Students are introduced to the engineering design process. They work both as individuals and in teams to design solutions to a variety of problems. The course exercises higher-order thinking skills by using technology to solve problems. All students use an engineering notebook to document and preserve their work. Students study the use of materials, such as steel, concrete, soil and masonry. This course exposes students to various fields of engineering and should be taken by any student who has an interest in the engineering fields.

850 INTRODUCTION TO TECHNOLOGY, 9-12 (½ credit)

Prerequisites: None.

This course acquaints students with our ever-changing technology in the processes centered around communication, manufacturing, construction, transportation and energy and power systems. Students work to design and construct technological solutions to everyday problems. Using a band saw, gas and arc welding equipment, shearing equipment, benders and molding equipment, students shape and assemble materials into a finished product.

852 DESIGN & ENGINEERING TECHNOLOGY, 9-12 (½ credit)

Prerequisites: Introduction to Technology.

This course meets one-half of the Fine Arts requirement and will introduce students to the principles of design used in construction, manufacturing and communication areas of technology. Students will use problem solving techniques that will help them understand how to sketch, draw, form and shape materials. The student will learn how to use cutting, welding, and forming machines and tools to design model cars, boats, rockets, sleds and other similar products.

856 ENGINE TECHNOLOGY, 10-12 (½ credit)

Prerequisites: None.

This course acquaints students with the basic principles involved in external and internal combustion engines. Students learn how each system of an engine operates. Through labs they learn about two and four cycle engine principles, carburetion, ignition, cooling, lubrication and overhaul, as well as how vehicles using gasoline, diesel, propane, jet, turbine, rotary and rocket engines basically operate.

857 TRANSPORTATION TECHNOLOGY, 11-12 (½ credit)

Prerequisites: None.

This course will introduce students to the basic mechanical principles of any device that travels over water, land, air or space. Students learn how to solve some of the technological problems by sketching, drawing, and planning a vehicle like a paddleboat, a go-cart, or a remote controlled wheeled vehicle. These vehicles may be mechanically, electrically or hydraulically powered. They also learn about the necessary processes of bending, forming and assembling necessary to connect and finish the vehicle. Students work together as a group, and the final product is auctioned off or sold at the conclusion of the semester.

863 INTRODUCTION TO METALS, 9-12 (½ credit)

Prerequisites: None.

This class gives students an introduction to hand & power tools associated with metalworking and fabrication. Layout of projects, welding, sharpening drill bits and micrometer use are some of the areas covered.

864 ADVANCED ENGINES, 10-12 (½ credit)

Prerequisites: Engine Tech or permission of instructor.

This course covers maintenance, efficiency and performance for students interested in diesel engines.

865 DIGITAL FABRICATION, 9-12 (½ credit)

Prerequisites: None.

Imagine a physical object and then digitally design and create it in two or three dimensions. This course will be taught by a GSA teacher in the Idea Studio fabrication space at BHCS during a normal GSA class period. Students will use 2D and 3D digital design techniques to create objects using a 3D printer, laser cutter/engraver, CNC precision milling machines, electronic circuit production, molding/casting, vinyl cutter, and manual and power hand tools. A wide array of materials will be available, including wood, plastics, polystyrene, metals, silicone, clay, and leather.