

INDUSTRIAL TECHNOLOGY AND ENGINEERING

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

Engines	Engine Technology, Advanced Engines
Woodworking	Woodworking I & II, Advanced Woodworking, Home Repair and Maintenance, Boatbuilding
Engineering and Drafting	Drafting, Architectural Design, Pre-Engineering
Technology	Introduction to Technology, Introduction to Metals, Design and Engineering Technology, Digital Fabrication

Course #	Course Title	Grade Level	Credits	Prerequisites
811	Woodworking I	9-12	½	
830	Woodworking II	9-12	½	Woodworking I
843	Advanced Woodworking	11-12	½	Wood II and teacher permission
837	Boatbuilding	9-12	½	
840	Home Repair and Maintenance	10-12	½	
841	Drafting	9-12	½	
842	Architectural Design	11-12	½	Drafting or Art I
844	Pre-Engineering	11-12	½	Drafting (or as corequisite)
865	Digital Fabrication	9-12	½	
863	Introduction to Metals	9-12	½	
850	Introduction to Technology	9-12	½	
852	Design and Engineering Technology	9-12	½	Introduction to Technology
856	Engine Technology	10-12	½	
864	Advanced Engines	10-12	½	Engine Tech or permission

811 WOODWORKING I, 9-12 (½ credit)

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 finished quality. Woodworking I can be followed by Woodworking II.

830 WOODWORKING II, 9-12 (½ credit)

Prerequisite: 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 the instructor.

843 ADVANCED WOODWORKING, 11-12 (½ credit)

Prerequisite: Woodworking II or teacher permission

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.

837 BOATBUILDING, 9-12 (½ credit)

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.

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

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)

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)

Prerequisite: 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 visual and performing arts requirement.

844 PRE-ENGINEERING, 11-12 (½ credit)

Prerequisite: Drafting, or as corequisite

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.

865 DIGITAL FABRICATION, 9-12 (½ credit)

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.

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

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

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

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)

Prerequisite: Introduction to Technology

This course meets one-half of the visual and performing 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)

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.

864 ADVANCED ENGINES, 10-12 (½ credit)

Prerequisite: Engine Tech or teacher permission

This course covers maintenance, efficiency, and performance of diesel engines.