

**HINGHAM HIGH SCHOOL
CURRICULUM SUMMARY
INDUSTRIAL TECHNOLOGY**

Graphic Arts I

DESCRIPTIVE OVERVIEW

Graphic Design, as one of the ten leading industries in the United States, ranks high in the number of employees, value of product, number of establishments, and use of its products in daily living. In extending the course to include digital photography, students not only can develop insights and skills in the field, but can better understand the interrelatedness of all graphic procedures. This semester-long course meets six out of the seven-day cycle. This entry-level course draws students from throughout the school and has benefits for all who participate actively. Graphic Arts I is designed to prepare students for two more advanced courses, Graphic Arts II: Design and Graphic Arts II: Photography. Students complete exercises aimed at introducing them to the basic principles of typography and graphic design. Typography will also be considered within its larger historical context. Projects will be both theoretical and practical in nature, ranging from abstract designs using letter-forms to logo and business card design. Students develop a better understanding and appreciation of the art of photography. Students will be more knowledgeable on basic camera operation, techniques and composition. Finally, students will learn simple silk-screen techniques to produce a printed clothing item.

GOALS

Working within the framework and aims of general education, Industrial Technology develops an appreciation of a variety of tools, materials and processes. Consumer values are brought to students' attention as they are soon to be college students, wage earners, and purchasers of the products of industry. Students gain an insight into such graphic arts industries as computer generated images, printing, publishing, packaging, and the basic skills used in the preparation for production of screen-printed items. By exposure to experiences designed to explore various trade, management, and entrepreneurial experiences, academically-oriented students have the opportunity to elect Industrial Technology courses which will be of value to them in their college careers. Students are introduced to essential skills and knowledge, which enable them to experience a broad spectrum of hands-on, process-based activities. Students are given an understanding of hands-on learning & implementation through the process of design, creation, problem-solving, and completion of real-world projects which address Student Learning Expectations 4, 5, 6, and 7.

OBJECTIVES

As a result of experience gained in Graphic Arts I, students will:

1. Explore opportunities to present the fundamental working principles of graphic arts through description, example, demonstration, and actual practice.
2. Explore industrial opportunities to develop within students a knowledge and understanding of the opportunities in the graphic arts and photography fields so that students will be better able to recognize its value as a vocation and art form.
3. Gain consumer knowledge to develop students' abilities to select and appreciate various printed and photographic merchandise.
4. Develop safe work habits when using equipment found in printing shops and photographic facilities such as darkrooms.
5. Encourage individual creativity through the use of photographic and printing processes.
6. Develop basic entry skills for students who will seek direct employment upon finishing high school and for students to continue to develop their skills in college.

INSTRUCTIONAL MODEL

Method of instruction includes whole class, group work, differentiated instruction techniques, lecture/discussion, and individual/group projects. When necessary, classes are kept small in size in order to maximize close teacher/student interaction. The major emphasis is on skill development and hands-on learning. The overall goal is to help students develop the skills to become life-long learners with the intellectual curiosity, and real world application of learned hands-on skills to become informed, productive citizens. Critical thinking skills and hands-on techniques are stressed throughout the course.

RESOURCES

Design School Confidential, Extraordinary Class Projects from International Design Schools by Steven Heller & Lita Talarico

ASSESSMENT

Varied approaches are used to evaluate students. All assignments and projects are graded according to instructors' judgment of how they have demonstrated their abilities within school-wide rubrics as applied to specific projects, which are clearly stated at the beginning of each unit. Students are also evaluated on their ability to follow directions and their overall effort in every aspect of the course.

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Graphic Arts II: Graphic Design

DESCRIPTIVE OVERVIEW

Further training in graphics arts is helpful to students who will continue with their graphics training in preparation for submitting a portfolio to perspective colleges & universities or to enter the field upon graduation from high school. Advanced graphic arts has as its content the processes, products, technology and occupations of the printing, publishing, packaging, and related industries. Emphasis is placed on the current practices of the respective industries with practical application being basic to all instructional activities. After a review of all the skills introduced in Graphic Arts I, students begin to work on projects which have a very practical application in the real world. Students are introduced to Adobe Photoshop for the first time and are expected to begin working with both Adobe Photoshop and Illustrator on a regular basis as tools to solve various design problems in this course. Students will continue to perfect the silkscreen printing skills they were taught in Graphic Arts I. Quality production is emphasized.

GOALS

Working within the framework and aims of general education, Industrial Technology develops an appreciation of a variety of tools, materials and processes. Consumer values are brought to students' attention. By exposure to experiences designed to explore various trade, management, and entrepreneurial experiences, academically-oriented students have the opportunity to elect Industrial Technology courses which will be of value. Students are introduced to essential skills and knowledge, which enable them to experience a broad spectrum of hands-on, process-based activities. Students are given an understanding of hands-on learning & implementation through the process of design, creation, problem-solving, and completion of real-world projects.

OBJECTIVES

As a result of experience gained in Graphic Arts II: Graphic Design, students will:

1. Be able to recognize the major processes that make up a final product, from beginning to end, from sketches to finely crafted artwork.
2. Be able to perform various tasks in Adobe Photoshop such as image correction, manipulation and digital photo processing.
3. Have a realistic concept of their abilities and limitations in the various areas composing the graphic communications.
4. Have the personal traits of promptness, willingness to work, and the ability to accept supervision.
5. Be able to follow written and oral directions.
6. Be aware of the interrelationships among production departments and the contributions each makes to the cost of a job.
7. Be able to operate Adobe Illustrator, Adobe Photoshop, iPhoto and the operating system on a Macintosh computer.

INSTRUCTIONAL MODEL

Method of instruction includes whole class, group work, differentiated instruction techniques, lecture/discussion, and individual/group projects. When necessary, classes are kept small in size in order to maximize close teacher/student interaction. The major emphasis is on skill development and hands-on learning. The overall goal is to help students develop the skills to become life long learners with the intellectual curiosity, and real world application of learned hands-on skills to become informed, productive citizens. Critical thinking skills and hands-on techniques are stressed throughout the course.

RESOURCES

Design School Confidential, Extraordinary Class Projects from International Design Schools by Steven Heller & Lita Talarico

ASSESSMENT

Varied approaches are used to evaluate students. All assignments and projects are graded according to instructors' judgment of how they have demonstrated their abilities within school-wide rubrics as applied to specific projects, which are clearly stated at the beginning of each unit, students' ability to follow directions and their overall effort in every aspect of the course.

**HINGHAM HIGH SCHOOL
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Graphic Arts II: Photography

DESCRIPTIVE OVERVIEW

Further training in photography is helpful to students who will continue with their photo training in preparation for submitting a portfolio to perspective colleges & universities, to enter the field upon graduation from high school or continue the endeavor as an art form or in their everyday life. After a review of all the skills introduced in Graphic Arts I in the area of photography, students begin to work on projects that will teach them further methods in traditional film processing photography and digital photography. Students will research various photographers and learn how successful pros have established themselves with certain styles in photography. In Graphics II: Photo, students are introduced to the following: pin hole cameras, processing photos digitally, colorizing photos digitally and traditionally, telling a story with photographs, using contrast filters in the dark room, and appreciation for photography as an art form.

GOALS

Working within the framework and aims of general education, Industrial Technology develops an appreciation of a variety of tools, materials and processes. Consumer values are brought to students' attention. By exposure to experiences designed to explore various trade, management, and entrepreneurial experiences, academically-oriented students have the opportunity to elect Industrial Technology courses which will be of value. Students are introduced to essential skills and knowledge, which enable them to experience a broad spectrum of hands-on, process-based activities. Students are given an understanding of hands-on learning & implementation through the process of design, creation, problem-solving, and completion of real-world projects.

OBJECTIVES

As a result of experience gained in Graphic Arts II: Photography, students will:

1. Be able to recognize the major processes that make up a final product, from beginning to end, from composing a good photograph to mounting a finished piece.
2. Be able to perform various tasks in Adobe Photoshop such as scanning negatives, image correction, manipulation and digital photo processing.
3. Have a realistic concept of their abilities and limitations in the various areas composing the graphic communications.
4. Have the personal traits of promptness, willingness to work, and the ability to accept supervision.
5. Be able to follow written and oral directions.
6. Be aware of the interrelationships among production departments and the contributions each makes to the cost of a job.
7. Further develop their skills in the darkroom.

INSTRUCTIONAL MODEL

Method of instruction includes whole class, group work, differentiated instruction techniques, lecture/discussion, and individual/group projects. When necessary, classes are kept small in size in order to maximize close teacher/student interaction. The major emphasis is on skill development and hands-on learning. The overall goal is to help students develop the skills to become life-long learners with the intellectual curiosity, and real world application of learned hands-on skills to become informed, productive citizens. Critical thinking skills and hands-on techniques are stressed throughout the course.

ASSESSMENT

Varied approaches are used to evaluate students. All assignments and projects are graded according to instructors' judgment of how they have demonstrated their abilities within school-wide rubrics as applied to specific projects, which are clearly stated at the beginning of each unit, students' ability to follow directions and their overall effort in every aspect of the course.

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Graphic Arts III

DESCRIPTIVE OVERVIEW

In the process of assisting the teacher in instructing the basic skills needed in beginning graphics courses, Graphics III students are able to sharpen their own skills in their areas of strength, and strengthen their knowledge in areas in which they have less previous depth of knowledge of experience. In addition to the practical experience to be gained by those who may contemplate a career in business management or in a position as an instructor in industry, the military service, public or private schools or colleges, each student is likely to gain a deeper understanding of printing and the allied graphic arts as well as having much insight into numerous areas of photography and visual communications. Students are scheduled with either Graphic Arts I or II students and will be instructing, under teacher supervision. Other phases of this course include acting as a graphic designer, with the instructor as Art Director, completing projects requested by other departments or the administration. This includes working with other members of the faculty as “clients,” and can include some opportunity for interdisciplinary learning.

GOALS

Working within the framework and aims of general education, Industrial Technology develops an appreciation of a variety of tools, materials and processes. Consumer values are brought to students’ attention. By exposure to experiences designed to explore various trade, management, and entrepreneurial experiences, academically-oriented students have the opportunity to elect Industrial Technology courses which will be of value. Students are introduced to essential skills and knowledge, which enable them to experience a broad spectrum of hands-on, process-based activities. Students are given an understanding of hands-on learning & implementation through the process of design, creation, problem-solving, and completion of real-world projects.

OBJECTIVES

As a result of experience gained in Graphic Arts III, students will:

1. Be able to recognize the major processes that make up a final product, from beginning to end, from sketches to finely crafted artwork.
2. Be able to perform various tasks in Adobe Photoshop such as image correction, manipulation and digital photo processing.
3. Have a realistic concept of their abilities and limitations in the various areas composing the graphic communications.
4. Have the personal traits of promptness, willingness to work, and the ability to accept supervision.
5. Be able to follow written and oral directions.
6. Be aware of the interrelationships among production departments and the contributions each makes to the cost of a job.
7. Be able to operate Adobe Illustrator, Adobe Photoshop, iPhoto and the operating system on a Macintosh computer.

INSTRUCTIONAL MODEL

Method of instruction includes whole class, group work, differentiated instruction techniques, lecture/discussion, and individual/group projects. When necessary, classes are kept small in size in order to maximize close teacher/student interaction. The major emphasis is on skill development and hands-on learning. The overall goal is to help students develop the skills to become life-long learners with the intellectual curiosity, and real world application of learned hands-on skills to become informed, productive citizens. Critical thinking skills and hands-on techniques are stressed throughout the course.

RESOURCES

Design School Confidential, Extraordinary Class Projects from International Design Schools by Steven Heller & Lita Talarico

ASSESSMENT

Varied approaches are used to evaluate students. All assignments and projects are graded according to instructors’ judgment of how they have demonstrated their abilities within school-wide rubrics as applied to specific projects, which are clearly stated at the beginning of each unit, students’ ability to follow directions and their overall effort in every aspect of the course.

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Technical Drawing I

DESCRIPTIVE OVERVIEW

A study of line technique, lettering, geometry of technical drawing, orthographic projection, dimensioning, shop processes, sectional views, auxiliary views, and pictorial drawings is made. Technical Drawing I is oriented to beginning students, exposing them to as many types of drawings as possible without exposure to some of the more technical aspects of the field. The curriculum is flexible enough so the more talented individual may advance at a faster rate. Students are made aware, as in Industrial Arts I – Mechanical Drawing, of local opportunities in the drafting field and the role of a draftsman in industry. The second half of the course is architectural drawing. Students learn kitchen and bath design and go on to draw a 2000 square foot dream house.

GOALS

Working within the framework and aims of general education, Industrial Technology develops an appreciation of a variety of tools, materials and processes. Consumer values are brought to students' attention. By exposure to experiences designed to explore various trade, management, and entrepreneurial experiences, academically-oriented students have the opportunity to elect Industrial Technology courses which will be of value. Students are introduced to essential skills and knowledge, which enable them to experience a broad spectrum of hands-on, process-based activities. Students are given an understanding of hands-on learning & implementation through the process of design, creation, problem-solving, and completion of real-world projects.

OBJECTIVES

Students are expected to:

1. Develop an understanding of good workmanship in drawing.
2. Develop self-reliance and confidence.
3. Develop the power of visualization of the complex problems in drafting.
4. Understand the "language of industry."
5. Become informed of the opportunities in the drafting field and its contribution to industry and modern day living.
6. Learn correct drawing techniques and methods.

INSTRUCTIONAL MODEL

Method of instruction includes whole class, group work, differentiated instruction techniques, lecture/discussion, and individual/group projects. When necessary, classes are kept small in size in order to maximize close teacher/student interaction. The major emphasis is on skill development and hands-on learning. The overall goal is to help students develop the skills to become life-long learners with the intellectual curiosity, and real world application of learned hands-on skills to become informed, productive citizens. Critical thinking skills and hands-on techniques are stressed throughout the course.

REOURCES AND REFERENCES

Basic Technical Drawing (1980), Henry C. Spencer and John T. Dygon, Glencoe Publishers, Mission Hill, CA

ASSESSMENT

Varied approaches are used to evaluate students. All assignments and projects are graded according to instructors' judgment of how they have demonstrated their abilities within school-wide rubrics as applied to specific projects, which are clearly stated at the beginning of each unit, students' ability to follow directions and their overall effort in every aspect of the course.

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Technical Drawing II

DESCRIPTIVE OVERVIEW

The study of drafting techniques and procedures is expanded to include complex industrial problems consisting of detail, assembly, pictorial, pictorial renderings, drawing reproduction techniques, screws, bolts and fasteners, sheet metal developments, intersections, transitions, basic descriptive geometry and graphic solutions, plate and box cams, and one and two-point perspectives. The second half of the course is architectural drawing. Students will design and draw a 3,000 square foot dream house complete with floor plans, plot plans, and elevations. Technical Drawing II is designed for students who show a greater interest in the field of drafting than the Technical Drawing I students. It is not vocationally oriented, but rather, prescribes to the general philosophy of Industrial Technology wherein the students are briefly exposed to many new ideas with specialization in none. Students are made aware of the many opportunities in the drafting field.

GOALS

Working within the framework and aims of general education, Industrial Technology develops an appreciation of a variety of tools, materials and processes. Consumer values are brought to students' attention. By exposure to experiences designed to explore various trade, management, and entrepreneurial experiences, academically-oriented students have the opportunity to elect Industrial Technology courses which will be of value. Students are introduced to essential skills and knowledge, which enable them to experience a broad spectrum of hands-on, process-based activities. Students are given an understanding of hands-on learning & implementation through the process of design, creation, problem-solving, and completion of real-world projects.

OBJECTIVES

Students are expected to:

1. Further develop skills and concepts in drawing.
2. Gain insight into and knowledge of the more advanced phases of technical drawing and CAD.
3. Appreciate other trades and how drafting affects them.
4. Supplement the Technical Drawing I course and gain an extended overall background to prepare them for specialization in a specific field.

INSTRUCTIONAL MODEL

Method of instruction includes whole class, group work, differentiated instruction techniques, lecture/discussion, and individual/group projects. When necessary, classes are kept small in size in order to maximize close teacher/student interaction. The major emphasis is on skill development and hands-on learning. The overall goal is to help students develop the skills to become life-long learners with the intellectual curiosity, and real world application of learned hands-on skills to become informed, productive citizens. Critical thinking skills and hands-on techniques are stressed throughout the course.

RESOURCES AND REFERENCES

Basic Technical Drawing (1980), Henry C. Spencer and John T. Dygon, Glencoe Publishers, Mission Hill, CA

ASSESSMENT

Varied approaches are used to evaluate students. All assignments and projects are graded according to instructors' judgment of how they have demonstrated their abilities within school-wide rubrics as applied to specific projects, which are clearly stated at the beginning of each unit, students' ability to follow directions and their overall effort in every aspect of the course.

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Technical Drawing III

DESCRIPTIVE OVERVIEW

This course is for students who have completed two years of Technical Drawing and have the interest and desire to investigate a particular field of study with the intention of further education in a definite area of immediate employment upon graduation. Technical Drawing III is geared for students who show aptitude and interest in furthering their skills and knowledge in the technical drawing area. Students may specialize in the following areas: architectural drawing, marine, aerospace, advanced descriptive geometry, industrial engineering and design problems, or other selected areas.

GOALS

Working within the framework and aims of general education, Industrial Technology develops an appreciation of a variety of tools, materials and processes. Consumer values are brought to students' attention. By exposure to experiences designed to explore various trade, management, and entrepreneurial experiences, academically-oriented students have the opportunity to elect Industrial Technology courses which will be of value. Students are introduced to essential skills and knowledge, which enable them to experience a broad spectrum of hands-on, process-based activities. Students are given an understanding of hands-on learning & implementation through the process of design, creation, problem-solving, and completion of real-world projects.

OBJECTIVES

Students are expected to:

1. Gain insight and knowledge in a specific drawing area.
2. Be fully prepared for further education at some higher institute of education.
3. Develop an understanding of the many different subject areas related to the field.
4. To prepare students for employment if further formal study is not desired.

INSTRUCTIONAL MODEL

Method of instruction includes whole class, group work, differentiated instruction techniques, lecture/discussion, and individual/group projects. When necessary, classes are kept small in size in order to maximize close teacher/student interaction. The major emphasis is on skill development and hands-on learning. The overall goal is to help students develop the skills to become life-long learners with the intellectual curiosity, and real world application of learned hands-on skills to become informed, productive citizens. Critical thinking skills and hands-on techniques are stressed throughout the course.

RESOURCES/REFERENCES

Carpentry (1984), William M. Buttery and H.B. Miller, Southwestern Construction Technology Series, Cincinnati
Drafting for Industry (1984), Walter C. Brown, Goodheart-Wilcox Co., South Holland, IL
Architectural Residential Drawing and Design (1981), Cloise E. Kicklighter and Ronald G. Baird, Goodheart-Wilcox Co., South Holland, IL
Architectural Graphic Standards (1981), Robert P. Packard, John Wiley and Sons, New York
Drafting Metric (1980), Charles Rohmeier, American Technical Society, Chicago
Woodworking Tools, Materials, Process (1980), Williams P. Spence and Duane L. Griffiths, American Technical Society, Chicago
Modern Carpentry (1979), Willis H. Wagner, Goodheart-Wilcox Co., South Holland, IL
Basic Technical Drawing (1980), Henry C. Spencer and John T. Dygon, Glencoe Publishers, Mission Hills, CA

ASSESSMENT

Varied approaches are used to evaluate students. All assignments and projects are graded according to instructors' judgment of how they have demonstrated their abilities within school-wide rubrics as applied to specific projects, which are clearly stated at the beginning of each unit, students' ability to follow directions and their overall effort in every aspect of the course.

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Woodworking Technology I

DESCRIPTIVE OVERVIEW

Woodworking Technology I involves problem solving, design, and manufacturing in addition to student selected projects. Students will be introduced to woodworking using a variety of hands-on activities. Students will develop the necessary skills to use a variety of hand and power tools safely. The students may choose to pursue areas such as furniture making, household accessories, sports equipment, wood carving, laminating wood and plastics, wood finishing procedures, boat building, pattern making, upholstery, or the study of lumber, its products, and related materials. This course may be repeated for full credit with instructor's approval.

GOALS

Working within the framework and aims of general education, Industrial Technology develops an appreciation of a variety of tools, materials and processes. Consumer values are brought to students' attention. By exposure to experiences designed to explore various trade, management, and entrepreneurial experiences, academically-oriented students have the opportunity to elect Industrial Technology courses which will be of value. Students are introduced to essential skills and knowledge, which enable them to experience a broad spectrum of hands-on, process-based activities. Students are given an understanding of hands-on learning & implementation through the process of design, creation, problem-solving, and completion of real-world projects.

OBJECTIVES

1. To provide exposure to industry in terms of the materials, procedures, and equipment relative to a technical society.
2. Develop an understanding of working safely with hand tools and various types of wood.
3. To provide situations where students attempt to solve problems creatively by employing principles of good functional design.
4. To continue to provide safe machine tool operations and advance the body of knowledge which has been acquired in the Industrial Technology program.
5. Learn respect and proper care of equipment.
6. Become an insightful problem solver.

INSTRUCTIONAL MODEL

Method of instruction includes whole class, group work, differentiated instruction techniques, lecture/discussion, and individual/group projects. When necessary, classes are kept small in size in order to maximize close teacher/student interaction. The major emphasis is on skill development and hands-on learning. The overall goal is to help students develop the skills to become life-long learners with the intellectual curiosity, and real world application of learned hands-on skills to become informed, productive citizens. Critical thinking skills and hands-on techniques are stressed throughout the course.

RESOURCES AND REFERENCES

Safety Education in Industrial Technology, National Safety Council

Fine Woodworking Magazine, Massachusetts Science & Engineering Technology Curriculum Frameworks

Woodworking Tools, Materials, Process (1980), William P. Spence and Duane L. Griffiths, American Technical Publishers, Inc., Aslip, IL

Basic Technical Drawing (1980), Henry C. Spencer and John T. Dygon, Glencoe Publishers, Mission Hills, CA

Modern Carpentry (1979), Willis H. Wagner, Goodheart-Wilcox Co., South Holland, IL

ASSESSMENT

Varied approaches are used to evaluate students. All assignments and projects are graded according to instructors' judgment of how they have demonstrated their abilities within school-wide rubrics as applied to specific projects, which are clearly stated at the beginning of each unit, students' ability to follow directions and their overall effort in every aspect of the course.

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Woodworking Technology II

DESCRIPTIVE OVERVIEW

Woodworking Technology II involves problem solving, design, and manufacturing in addition to student selected projects. The students may choose to pursue areas previously experienced such as furniture making, household accessories, sports equipment, etc., or explore completely new areas such as wood carving, laminating wood and plastics, advanced wood finishing procedures, boat building, pattern making, upholstery, or the study of lumber, its products, and related materials. This course may be repeated for full credit with instructor's approval.

GOALS

Working within the framework and aims of general education, Industrial Technology develops an appreciation of a variety of tools, materials and processes. Consumer values are brought to students' attention. By exposure to experiences designed to explore various trade, management, and entrepreneurial experiences, academically-oriented students have the opportunity to elect Industrial Technology courses which will be of value. Students are introduced to essential skills and knowledge, which enable them to experience a broad spectrum of hands-on, process-based activities. Students are given an understanding of hands-on learning & implementation through the process of design, creation, problem-solving, and completion of real-world projects.

OBJECTIVES

1. To provide exposure to industry in terms of the materials, procedures, and equipment relative to a technical society.
2. Develop an understanding of working safely with hand tools and various types of wood.
3. To provide situations where students attempt to solve problems creatively by employing principles of good functional design.
4. To continue to provide safe machine tool operations and advance the body of knowledge which has been acquired in the Industrial Technology program.
5. Learn respect and proper care of equipment.
6. Become an insightful problem solver

INSTRUCTIONAL MODEL

Method of instruction includes whole class, group work, differentiated instruction techniques, lecture/discussion, and individual/group projects. When necessary, classes are kept small in size in order to maximize close teacher/student interaction. The major emphasis is on skill development and hands-on learning. The overall goal is to help students develop the skills to become life-long learners with the intellectual curiosity, and real world application of learned hands-on skills to become informed, productive citizens. Critical thinking skills and hands-on techniques are stressed throughout the course.

RESOURCES AND REFERENCES

Safety Education in Industrial Technology, National Safety Council

Fine Woodworking Magazine, Massachusetts Science & Engineering Technology Curriculum Frameworks

Woodworking Tools, Materials, Process (1980), William P. Spence and Duane L. Griffiths, American Technical Publishers, Inc., Aslip, IL

Basic Technical Drawing (1980), Henry C. Spencer and John T. Dygon, Glencoe Publishers, Mission Hills, CA

Modern Carpentry (1979), Willis H. Wagner, Goodheart-Wilcox Co., South Holland, IL

ASSESSMENT

Varied approaches are used to evaluate students. All assignments and projects are graded according to instructors' judgment of how they have demonstrated their abilities within school-wide rubrics as applied to specific projects, which are clearly stated at the beginning of each unit, students' ability to follow directions and their overall effort in every aspect of the course.

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Construction Technology

DESCRIPTIVE OVERVIEW

This course is designed to provide students with the basic skills required for entry into the building trades and to provide the skills needed for those students who desire further vocational in-depth training at institutions of higher learning. Heavy emphasis is placed on cultivating positive working relationships with peers and to develop a proper work ethic. Related information will include masonry, plumbing, and welding instruction. There will be emphasis placed on characteristics of materials and their application. An important component of this course will include how to read blueprints and specifications in order to obtain a total picture of the project addressed. Energy conservation will be introduced through instruction in efficient insulating materials and solar heat. Technological changes, such as those brought about by off-site construction of building parts, will be important to this course. Students are encouraged to exercise their freedom of choice to pursue their own self-interests to the degree that we have the resources to accommodate their requests.

GOALS

Working within the framework and aims of general education, Industrial Technology develops an appreciation of a variety of tools, materials and processes. Consumer values are brought to students' attention. By exposure to experiences designed to explore various trade, management, and entrepreneurial experiences, academically-oriented students have the opportunity to elect Industrial Technology courses which will be of value. Students are introduced to essential skills and knowledge, which enable them to experience a broad spectrum of hands-on, process-based activities. Students are given an understanding of hands-on learning & implementation through the process of design, creation, problem-solving, and completion of real-world projects.

OBJECTIVES

1. To problem solve, design, and construct manufacturing projects.
2. To increase in each student a measure of skill in the use of common tools and machines, and an understanding of the problems involved in common types of construction and repair.
3. To increase in each student the habits of orderly, complete, and efficient performance of any task and of self-reliance and resourcefulness in meeting practical situations.
4. To increase in each student the appreciation of good design and workmanship, and the ability to select, care for, and use tools and materials wisely.
5. To increase in each student the ability to think creatively and to apply the principles of planning and design construction techniques, scientific principles, and mathematical computations to the solution of problems.
6. To increase in each student skill in performance and knowledge of principles and theory through study and application of the building trades and/or other options that are previously approved.
7. To increase in each student occupational competence and stamina and the acquisition of basic skills and attitudes required to successfully participate in the building trades or higher education in the field. A positive work ethic is stressed.

INSTRUCTIONAL MODEL

A student foreman and assistant foreman, under the teacher's supervision, assign all student work and grade the performance of each crew member daily. The first year of the program is utilized in gaining the necessary knowledge and skills to properly operate all machine tools and equipment. It is an "introductory" level. The second year of the program provides opportunities for outside work, with more in-depth applied learning. This is an "exploration" level. The third year of the program utilizes all of the above knowledge, skills, and attitudes to expand in a direction of choice and to become proficient in that area of interest. This phase carries with it the responsibility for helping the first year students to learn. Leadership is also stressed. This is a "specialization/applied" level.

ASSESSMENT

Students are evaluated each day in the following areas: following directions, quantity of work, quality of work, initiative, and attitude. All students maintain folders with projects completed, safety sheets, and information sheets. Student projects are assessed by a rubric.

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Consumer Automotives

DESCRIPTIVE OVERVIEW

Consumer Automotives is an introductory course in basic automobile maintenance and repair procedures. The primary area of concentration will be use of the vehicle's owner manual as a guide to learning automotive terminology, proper vehicle operation, performance of routine maintenance and simple repairs. Some of the fundamentals to be covered will be proper starting procedures; dashboard instruments; under-hood inspection & fluid maintenance; engine oil selection & changing; cooling system operation & maintenance; spark plug selection & replacement; steering & suspension system operation & lubrication; and tire selection, maintenance & repair. Massachusetts vehicle inspection procedures will be covered and then used as a guide in learning how to evaluate a used car. Whenever possible, the students will be encouraged to apply the concepts they are learning to the repair of other units such as lawnmowers, snowblowers, bicycles or other pieces of equipment they have available.

OBJECTIVES

1. Develop good reading and writing skills.
2. Become an insightful problem solver.
3. Become a researcher of technical issues and innovations.
4. Development of basic mechanical skills.
5. Develop an understanding and appreciation of the need for regular service and maintenance of equipment.
6. Provide students with experiences which will help them to make more informed and meaningful educational, consumer, and career selections in the future.

INSTRUCTIONAL MODEL

Method of instruction includes whole class, group work, differentiated instruction techniques, lecture/discussion, and individual/group projects. When necessary, classes are kept small in size in order to maximize close teacher/student interaction. The major emphasis is on skill development and hands-on learning. The overall goal is to help students develop the skills to become life-long learners with the intellectual curiosity, and real world application of learned hands-on skills to become informed, productive citizens. Critical thinking skills and hands-on techniques are stressed throughout the course.

RESOURCES AND REFERENCES

Various owner manuals will be used, discussed and compared. Outline sheets will be used for taking notes, worksheets will be used for work done at home or in class, and related printed material will be used where relevant. These materials are to be kept in a 3-ring binder for future reference and thus become the student's personal textbook.

Other resource materials the students will be exposed to include the following:

- Automotive repair manuals by Chilton, Haynes, Motor, and others
- Various vehicle-specific shop manuals
- Speakers and field trips
- Hands-on experiences on vehicles

ASSESSMENT

Varied approaches are used to evaluate students. All assignments and projects are graded according to instructors' judgment of how they have demonstrated their abilities within school-wide rubrics as applied to specific projects, which are clearly stated at the beginning of each unit. Students are also evaluated on their ability to follow directions and their overall effort in every aspect of the course.

**HINGHAM HIGH SCHOOL
CURRICULUM SUMMARY
INDUSTRIAL TECHNOLOGY**

Power Technology I

DESCRIPTIVE OVERVIEW

In Power Technology I the student will, by way of basic automotive repair, study proper tool selection and use, problem solving techniques through diagnosis and trouble shooting, proper work ethics and attitudes, relationship of automotive theory and repair to the other disciplines in the school, and the importance and impact of the automobile on our society. Primary concentration will be with the construction, theory of operation, and proper service of the automobile four-stroke-cycle piston engine and its lubricating, cooling, and electrical systems. Also included will be some study of basic service station techniques such as tire changing and balancing, chassis lubrication, vehicle safety and emission inspection, and some emergency trouble shooting. In the town of Hingham and the surrounding communities there are a large number of repair facilities which can be a source of employment to people who have had some automotive repair training. This course gives the student theoretical as well as hands-on experiences similar to those which would be found in actual employment. With this background a student should be more able to make meaningful technical school, career and consumer choices in the future.

GOALS

Working within the framework and aims of general education, Industrial Technology develops an appreciation of a variety of tools, materials and processes. Consumer values are brought to students' attention. By exposure to experiences designed to explore various trade, management, and entrepreneurial experiences, academically-oriented students have the opportunity to elect Industrial Technology courses which will be of value. Students are introduced to essential skills and knowledge, which enable them to experience a broad spectrum of hands-on, process-based activities. Students are given an understanding of hands-on learning & implementation through the process of design, creation, problem-solving, and completion of real-world projects.

OBJECTIVES

As a result of experience gained in Power Tech I, students will:

1. Develop an understanding of the mechanical and scientific principles demonstrated and used in tools and vehicles.
2. Develop an awareness of the many technical schools and/or career opportunities which are available in this field.
3. Develop an ability to effectively work in groups.
4. Understand the need for logical step-by-step diagnostic and repair procedures.
5. Gain an appreciation of the interrelation of the various subject area disciplines.
6. Gain some of the actual work experience necessary to maintain their vehicle.
7. Become a more informed and selective consumer.

INSTRUCTIONAL MODEL

Method of instruction includes whole class, group work, differentiated instruction techniques, lecture/discussion, and individual/group projects. When necessary, classes are kept small in size in order to maximize close teacher/student interaction. The major emphasis is on skill development and hands-on learning. The overall goal is to help students develop the skills to become life-long learners with the intellectual curiosity, and real world application of learned hands-on skills to become informed, productive citizens. Critical thinking skills and hands-on techniques are stressed throughout the course.

RESOURCES AND REFERENCES

There is no formal text for this course. Students are given worksheets on which they are to keep classroom notes and other relevant information. These sheets are to be kept in a 3-ring binder which will provide the student with their own permanent textbook to be used at home or expanded in Power Technology II, the successor course the following year.

Other resource materials the students will be exposed to include the following:

- various vehicle owner's manuals brought in or donated by students and faculty
- vehicle repair manuals by Chilton, Haynes, Motor, and others
- various vehicle-specific shop manuals which may be brought in or donated
- speakers brought in from local businesses and field trips to technical schools
- first-hand experiences related by students currently employed in the field

ASSESSMENT

Varied approaches are used to evaluate students. All assignments and projects are graded according to instructors' judgment of how students have demonstrated their abilities within school-wide rubrics as applied to specific projects, which are clearly stated at the beginning of each unit, students' ability to follow directions and their overall effort in every aspect of the course.

**HINGHAM HIGH SCHOOL
CURRICULUM SUMMARY
INDUSTRIAL TECHNOLOGY**

Power Technology II

DESCRIPTIVE OVERVIEW

Power Technology II is an advanced course in which the student will continue his/her study of the theory and repair of the automobile continuing from where Power Technology I ended. Because this course is a continuation from previous study, a high degree of interest and motivation is assumed of each student. For this reason, successful completion of Power Technology I is a prerequisite for admission to Power Technology II. After a brief review of past experiences, the class will study basic theories, parts, operation and service of the ignition system, fuel system, carburetion, and fuel injection. When performing electronic diagnosis of ignition systems and tune-ups, the student will be exposed to digital multimeters, timing lights and various electronic computer code readers. Other areas to receive attention will be basic repair facility practices which were introduced in the previous year such as Massachusetts vehicle inspection procedures, tire selection and service, steering and suspension system service, and vehicle evaluation and selection methods. Power Technology II, as in Power Technology I, is designed to provide the student the opportunity to develop the necessary skills which will enable him/her to be successful in gaining admission to a related post secondary degree program or entry level employment in the automotive field. This primary emphasis, however, should not deter a student who does not plan on entering the automotive field from selecting this course.

GOALS

Working within the framework and aims of general education, Industrial Technology develops an appreciation of a variety of tools, materials and processes. Consumer values are brought to students' attention. By exposure to experiences designed to explore various trade, management, and entrepreneurial experiences, academically-oriented students have the opportunity to elect Industrial Technology courses which will be of value. Students are introduced to essential skills and knowledge, which enable them to experience a broad spectrum of hands-on, process-based activities. Students are given an understanding of hands-on learning & implementation through the process of design, creation, problem-solving, and completion of real-world projects.

OBJECTIVES

As a result of experience gained in Power Technology II, students will

1. Develop good reading and writing skills
2. Become an insightful problem solver
3. Become a researcher of technical issues and innovations
4. Develop public speaking skills and present reports to groups
5. Become a critical thinker and discuss technical matters
6. Learn the correct and safe use of the tools and machines provided
7. Follow a prepared drawing to the completion of a project as specified
8. Design and construct projects from wood
9. Learn respect and proper care of equipment

INSTRUCTIONAL MODEL

Method of instruction includes whole class, group work, differentiated instruction techniques, lecture/discussion, and individual/group projects. When necessary, classes are kept small in size in order to maximize close teacher/student interaction. The major emphasis is on skill development and hands-on learning. The overall goal is to help students develop the skills to become life-long learners with the intellectual curiosity, and real world application of learned hands-on skills to become informed, productive citizens. Critical thinking skills and hands-on techniques are stressed throughout the course.

ASSESSMENT

Varied approaches are used to evaluate students. All assignments and projects are graded according to instructors' judgment of how students have demonstrated their abilities within school-wide rubrics as applied to specific projects, which are clearly stated at the beginning of each unit, students' ability to follow directions and their overall effort in every aspect of the course.

RESOURCES AND REFERENCES

There is no formal text for this course. Students are given worksheets on which they are to keep classroom notes and other relevant information. These sheets are to be kept in a 3-ring binder which will provide the student with their own permanent textbook to be used at home or expanded in Power Technology II, the successor course the following year.

Other resource materials the students will be exposed to include the following:

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- first-hand experiences related by students currently employed in the field