

# TECHNOLOGY EDUCATION

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## WOOD TECHNOLOGY 1

(#9050)

**Periods Per Week:** 5

**Prerequisites:** None

**Credit Value:** .5

**Semester:** Either

**Open to Grades:** 9, 10, 11, 12

Wood Technology 1 is a semester course designed as an introductory class designed for those students who enjoy working hands on with woodworking equipment. In this class students will be introduced to each piece of woodworking equipment that will be used throughout the semester. Students will also develop safe hand tool and machine tool skills as they work on assigned projects. Over time students will be capable of determining the several different species of wood. The knowledge and skills that the student acquires will become practical life-long benefits and will effectively aid the student to make a transition from the school environment to the workplace.

Possible Projects: Foot Stool

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## WOOD TECHNOLOGY 2

(#9060)

**Periods Per Week:** 5

**Prerequisites:** 60% or above in Wood Technology 1

**Credit Value:** .5

**Semester:** Either

**Open to Grades:** 9, 10, 11, 12

Wood Technology 2 is a semester course is designed as a continuation of Wood Technology 1. It will provide an opportunity for students to improve to a greater knowledge in woodworking. Students will begin to read their own set of plans or prints as well as develop their own material list. Throughout the semester students will continue to gain awareness of the importance of safety while working with the various woodworking tools. The knowledge and skills that the student acquires will become practical life-long benefits and will effectively aid the student to make a transition from the school environment to the workplace.

Possible Projects: Mantel Clock, Magazine Rack

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## WOOD TECHNOLOGY 1 & 2

(#9070)

**Periods Per Week:** 5

**Prerequisites:** See above

**Credit Value:** 1.0

**Semester:** Both

**Open to Grades:** 9, 10, 11, 12

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## WOOD TECHNOLOGY 3

(#9075)

**Periods Per Week:** 5

**Prerequisites:** 70% or above in Wood Technology 2

**Credit Value:** .5

**Semester:** Either

**Open to Grades:** 10, 11, 12

Wood Technology 3 is a semester course designed to extend the skills, knowledge and work ethic developed in Wood Technology 1 and 2. During this course the CNC router will be introduced. At this time the students will encounter the opportunity to both program the CNC router and import the files to a post processor. More advanced techniques in the use of the machines, tools, manufacturing processes, and finishing procedures related to woodworking will be included, as well as a continual emphasis on safety.

Possible Project: Rocking Chair

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**WOOD TECHNOLOGY 4****(#9080)****Periods Per Week: 5****Prerequisites: 70% or above in Wood Technology 3****Credit Value: .5****Semester: Either****Open to Grades: 10, 11, 12**

Wood Technology 4 is a semester course designed as a continuation of Wood Technology 1, 2, and 3. The CNC router will be used extensively in this course to use on individual projects as well as mass production activities. Throughout the semester, much of the emphasis will be placed on not only operating the machines but setting the machines for the various applications and machines capability. Once again, safety will be of the highest priority.

Possible Project: Occasional Table

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**WOOD TECHNOLOGY 3 & 4****(#9085)****Periods Per Week: 5****Prerequisites: See above****Credit Value: 1.0****Semester: Both****Open to Grades: 10, 11, 12**

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**CABINETRY 1****(#9198)****Periods Per Week: 5****Prerequisite: 80% or above in Wood Technology 4****Credit Value: 1.0****Semester: Full Year****Open to Grades: 11, 12**

Cabinetry 1 is a full year course designed as a continuation of Wood Technology 4. Students will design, plan and construct different types of cabinets. Typical activities will include cabinet framing, jointing and re-facing. Students will learn several different types of cabinetry, from designing raised panel doors, to stile and rail framing. The CNC router will be used extensively to produce many of the parts pertaining to student projects. Larger projects will require students to purchase some of their own material. This course will open the doors for students with true woodworking ability.

Projects are student selected.

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**CABINETRY 2****(#9199)****Periods Per Week: 5****Prerequisite: 80% or above in Cabinetry 1****Credit Value: 1.0****Semester: Full Year****Open to Grades: 12**

Cabinetry 2 is a full year course designed as a continuation of Cabinetry 1 and strictly for seniors with a true love of woodworking. Students will not only be expected to use the equipment in a safe manner, but also be capable of setting up the equipment for the various machine functions. Complex joinery and various finishing technique will be covered extensively. The CNC router will be used to make many of the moldings previously purchased. A student enrolling in this class needs to be serious about woodworking and be willing to encompass new ideas. A senior leaving this class will not only have the ability to work on his or her individual project throughout their lives, but they will also be able to transfer what they learned to the work force. Larger projects will require students to purchase some of their own material.

Projects are student selected.

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**METAL TECHNOLOGY 1****(#9090)****Periods Per Week: 5**  
**Prerequisites: None****Credit Value: .5****Semester: Either**  
**Open to Grades: 9, 10, 11, 12**

Metal Technology 1 is a semester course designed to provide students an introduction to basic metalworking. Direct hands-on experiences include small projects and exercises that are used to show the basic processes involved in the following areas: hand tools, measuring and layout, materials identification, sheet metal, hand threading, forging, heat treating and safety.

Possible Projects: Sheet Metal Tray, Toolbox, Dustpan, Machinist Hammer

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**METAL TECHNOLOGY 2****(#9100)****Periods Per Week: 5**  
**Prerequisites: 60% or above in Metal Technology 1****Credit Value: .5****Semester: Either**  
**Open to Grades: 9, 10, 11, 12**

Metal Technology 2 is a semester course is designed to provide students an introduction to basic machine shop areas. These areas include shop and machine safety, precision measuring, lathe and milling machine set up and operations, basic CNC machining, gas and electric welding, forging, heat treating and safety.

Possible Projects: Naval Cannon Paperweight, Hat Rack, Tile-Top Plant Stand

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**METAL TECHNOLOGY 1 & 2****(#9101)****Periods Per Week: 5**  
**Prerequisites: See above****Credit Value: 1.0****Semester: Both**  
**Open to Grades: 9, 10, 11, 12**

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**METAL TECHNOLOGY 3****(#9102)****Periods Per Week: 5**  
**Prerequisites: 70% or above in Metal Technology 2****Credit Value: .5****Semester: Either**  
**Open to Grades: 10, 11, 12**

Metal Technology 3 is a semester course is designed to provide students an opportunity to work in an advanced machine shop course. This course is designed for the student who has a great interest in the metalworking field. Areas to be covered are safety, designing, precision measurement, casting metal, metal lathe operations and set up, milling machine operations and set up, CNC machining techniques and set up and sharpening tools.

Possible Projects: Meat Tenderizer Hammer

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**METAL TECHNOLOGY 4****Credit Value: .5****(#9103)****Periods Per Week: 5****Semester: Either****Prerequisites: 70% or above in Metal Technology 3****Open to Grades: 10, 11, 12**

Metal Technology 4 is a semester course is designed to provide advanced students the opportunity to work in an advanced welding course. This course is designed for the student who has a great interest in the metalworking field. Areas to be covered are safety, designing, weld symbol recognition, weld joint recognition, shielded metal arc welding, gas metal arc welding and plasma cutter setup and operation.

Possible Projects: Two-Wheeled Dolly

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**METAL TECHNOLOGY 3 & 4****Credit Value: 1.0****(#9104)****Periods Per Week: 5****Semester: Both****Prerequisites: See above****Open to Grades: 10, 11, 12**

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**METAL FABRICATION 1****Credit Value: 1.0****(#9105)****Periods Per Week: 5****Semester: Full Year****Prerequisites: 80% or above in Metal Technology 4****Open to Grades: 11, 12**

Metal Fabrication 1 is a full year course designed as a continuation of Metal Technology 4. Students will be required to research or design their own project plans for a large-scale project. Advanced metal fabrication techniques will be used to complete the students selected project. Students will be required to pay for a majority of the materials used.

Possible Projects: Hitch Hauler, Smoker/Grill, Machinist Vise, and Ornamental Furniture

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**METAL FABRICATION 2****Credit Value: 1.0****(#9106)****Periods Per Week: 5****Semester: Full Year****Prerequisites: 80% or above in Metal Fabrication 1****Open to Grades: 12**

Metal Fabrication 2 is a full year course designed as a continuation of Metal Fabrication 1. Seniors enrolled in this capstone course will be capable of setting up shop equipment for the various processes used to create a large-scale project. The Torchmate CNC plasma cutter will be introduced and incorporated in the production of a student selected project. Metal Fabrication 2 is designed for the student looking to pursue a career in metalworking (welder, machinist, sheet metal worker, etc.) or engineering. Students will be required to pay for a majority of the materials used.

Possible Projects: Go Kart, Minibike, Barstool Racer, Interior /exterior furniture

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**ROBOTICS/ELECTRONICS 1****Credit Value: .5****(#9040)****Periods Per Week: 5****Semester: Either****Prerequisites: None****Open to Grades: 9, 10, 11, 12**

Robotics/Electronics 1 is a semester course designed to introduce the students to electricity and robotics. Students will design, construct and test various simple circuits to learn what each electronic component is and how it functions. Students will learn how to design, etch, and solder their own electronic circuit boards for different projects they will create to take home.

The robotics portion of the course will introduce students to the history, terminology, and programming theory. The students will use VEX EDR system to create a "Clawbot" that will be used throughout the remainder of the semester. Students will add optical shaft encoders, light sensors, ultrasonic rangefinders and limit switches to perform tasks and challenges. Introduction to robotic arm programming will be explored using a SCORBOT.

Possible Projects: Nerve tester, Aggravator Circuit and Outlet Tester.

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**ROBOTICS/ELECTRONICS 2****Credit Value: .5****(#9045)****Periods Per Week: 5****Semester: Either****Prerequisites: 60% or above in Robotics/Electronics 1****Open to Grades: 9, 10, 11, 12**

Robotics/Electronics 2 is a semester course designed to enable students to build upon the foundation developed in Robotics/Electronics 1. Students will gain experiences in the operation of digital circuits. The students will then become involved in the development and building of their own project integrated circuits.

Students will continue to develop programming skills using Robot C and various sensors to design and construct robotic systems that will perform complex tasks. Students will also incorporate automation technology and learn how to program an Epilog Laser Engraver to product student designed projects.

Possible Projects: Sound Effects Generator, Police Siren, Dog Tag engraving and other student designed engraving projects.

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**ROBOTICS/ELECTRONICS 1 & 2****Credit Value: 1.0****(#9046)****Periods Per Week: 5****Semester: Both****Prerequisites: See above****Open to Grades: 9, 10, 11, 12**

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**ROBOTICS 3/AUTOMATION****Credit Value: .5****(#9047)****Periods Per Week: 5****Semester: Either****Prerequisites: 70% or above in Robotics/Electronics 2****Open to Grades: 10, 11, 12**

Robotics 3/Automation is a semester course designed for students to gain experience with automation technology. Students will continue their programming study of SCORBOTS and VEX EDR systems with a focus on automation. Students will also be introduced into CNC Programming and machining using a variety of 3 and 4 axis machines.

Possible Projects: Name Plate, Coaster Set and other student designed projects.

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**ROBOTICS 4/AUTOMATION****Credit Value: .5****(#9048)****Periods Per Week: 5****Semester: Either****Prerequisites: 70% or above in Robotics 3****Open to Grades: 10, 11, 12**

Robotics 4/Automation is a semester course designed to develop advanced operating skills building on what was learned in previous level courses. Students will integrate different robots and machines. Students will continue their advanced programming study of SCORBOTS, VEX and CNC machining.

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**ROBOTICS 3 & 4/AUTOMATION****Credit Value: 1.0****(#9049)****Periods Per Week: 5****Semester: Both****Prerequisites: See above****Open to Grades: 10, 11, 12**

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**ENGINEERING DESIGN/COMPUTER****Credit Value: .5****AIDED DRAFTING 1****(#9110)****Periods Per Week: 5****Semester: Either****Prerequisites: None****Open to Grades: 9, 10, 11, 12**

Engineering Design/CAD 1 is a semester course designed for students who are thinking of entering the field of engineering or drafting. Students will be introduced to the engineering design process and how it relates to solving engineering problems. Students will demonstrate proper labeling, dimensioning, and sectioning of orthographic and isometric drawings, along with 3D modeling. Students will work both individually and in teams to design solutions to a variety of problems using Autodesk AutoCAD and Inventor Professional.

Possible Projects: Bridge Construction, Tower Construction and 3D Design, and printing.

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**ENGINEERING DESIGN/COMPUTER****Credit Value: .5****AIDED DRAFTING 2****(#9115)****Periods Per Week: 5****Semester: Either****Prerequisites: 60% or above in Engineering Design/  
Computer Aided Drafting 1****Open to Grades: 9, 10, 11, 12**

Engineering Design/CAD 2 is designed to enable students to build upon the foundation developed in Engineering Design/CAD 1. Students will continue to apply the engineering design process to create solutions to engineering problems on a larger scale. Math and science applications will also be introduced within the Inventor software and students will learn how to animate 3D drawings.

Possible Projects: Mouse Trap Car, Egg Drop Challenge, The Pringle Challenge and student designed 3D printing.

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<b>ENGINEERING DESIGN/COMPUTER AIDED DRAFTING 1 &amp; 2 (#9125)</b>	<b>Credit Value: 1.0</b>
<b>Periods Per Week: 5</b>	<b>Semester: Both</b>
<b>Prerequisites: See above</b>	<b>Open to Grades: 9, 10, 11, 12</b>

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<b>ENGINEERING DESIGN/COMPUTER AIDED DRAFTING 3 (#9130)</b>	<b>Credit Value: .5</b>
<b>Periods Per Week: 5</b>	<b>Semester: Either</b>
<b>Prerequisites: 70% or above in Engineering Design/ Computer Aided Drafting 2</b>	<b>Open to Grades: 10, 11, 12</b>

Engineering Design/CAD 3 will allow students to unlock the full potential of Inventor Professional. Students will learn how to create complex drawing animations and detailed assembly drawings. 3D part creating and printing will allow students to bring ideas from the screen into real life for testing and redesign.

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<b>ENGINEERING DESIGN/COMPUTER AIDED DRAFTING 4 (#9135)</b>	<b>Credit Value: .5</b>
<b>Periods Per Week: 5</b>	<b>Semester: Either</b>
<b>Prerequisites: 70% or above in Engineering Design/ Computer Aided Drafting 3</b>	<b>Open to Grades: 10, 11, 12</b>

Engineering Design/CAD 4 is a capstone course that will explore various types of engineering and sample drawings and challenges represented from each field. Autodesk software will be used extensively through this course as well as the incorporation of various CNC equipment from the robotics lab.

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<b>ENGINEERING DESIGN/COMPUTER AIDED DRAFTING 3 &amp; 4 (#9140)</b>	<b>Credit Value: 1.0</b>
<b>Periods Per Week: 5</b>	<b>Semester: Both</b>
<b>Prerequisites: See above</b>	<b>Open to Grades: 10, 11, 12</b>

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<b>VISUAL COMMUNICATIONS 1 (#9150)</b>	<b>Credit Value: .5</b>
<b>Periods Per Week: 5</b>	<b>Semester: Either</b>
<b>Prerequisites: None</b>	<b>Open to Grades: 9, 10, 11, 12</b>

Visual Communications 1 is a semester course designed to learn a variety of techniques used in the graphic design world. In this class students will be introduced to Adobe Photoshop, Illustrator and Microsoft Publisher to create exciting projects. Students will have the opportunity to design and print their own T-shirt using either the screen printing or vinyl pressing process. A variety of machines will be utilized to help create various projects.

Projects may include: T-Shirt, Business Card, Bumper Sticker, Cereal Box, 12-Month Calendar

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**VISUAL COMMUNICATIONS 2****Credit Value: .5****(#9160)****Periods Per Week: 5****Semester: Either****Prerequisites: 60% or above in Visual Com. 1****Open to Grades: 9, 10, 11, 12**

Visual Communications 2 is a semester course designed as a continuation of Visual Communications 1. Students will gain a greater knowledge of the graphic design world and in Adobe Photoshop and Illustrator. More tools and equipment will be explored and utilized to create a variety of challenging projects.

Projects may include: Trading Card, Mouse Pad, Animated GIF, Cell Phone Wallpaper, Vinyl Stickers, 2-Color T-shirt Design

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**VISUAL COMMUNICATIONS 1 & 2****Credit Value: 1.0****(#9165)****Periods Per Week: 5****Semester: Full Year****Prerequisites: See above****Open to Grades: 9, 10, 11, 12**

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**VISUAL COMMUNICATIONS 3****Credit Value: .5****(#9170)****Periods Per Week: 5****Semester: Either****Prerequisites: 70% or above in Visual Com. 2****Open to Grades: 10, 11, 12**

Visual Communications 3 is a semester course designed to build upon the knowledge of design that was learned in Visual Communications 1 & 2. Students will learn advanced tools in Adobe Photoshop and Illustrator. The vinyl cutter will be utilized for projects throughout the course. During this course, the laser engraver will be introduced.

Projects may include: DVD/Video Game Case Redesign, Coffee Mug, Face Swaps, 2-Color Vinyl Stickers, Multi-Colored T-Shirt Design

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**VISUAL COMMUNICATIONS 4****Credit Value: .5****(#9175)****Periods Per Week: 5****Semester: Either****Prerequisites: 70% or above in Visual Com. 3****Open to Grades: 10, 11, 12**

Visual Communications 4 is a semester course designed to build upon the knowledge of design that was learned in Visual Communications 1, 2 and 3. Students will use a variety of machines to produce individual projects as well as mass production activities. During this course, the 3D Printer will be introduced.

Projects may include: Multi-Colored T-Shirt Design, Movie Poster, Customized Puzzle, 3D Printed Product with Advertisement & Packaging

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**VISUAL COMMUNICATIONS 3 & 4****Credit Value: 1.0****(#9180)****Periods Per Week: 5****Semester: Full Year****Prerequisites: See above****Open to Grades: 10, 11, 12**



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**VIDEO MEDIA PRODUCTION 1****Credit Value: .5****(#9190)****Periods Per Week: 5**  
**Prerequisites: None****Semester: Either**  
**Open to Grades: 9, 10, 11, 12**

Video Media Production 1 is a semester long course designed to introduce students to the visual communications field. Students will learn hands-on skills of camcorder operations, video recording techniques, and basic editing procedures. Students will learn the basic operations and filming techniques by working with their cell phones and high-definition camcorders. Editing will be introduced to students with the use of Adobe Rush and Adobe Premiere Pro editing software. Students will have the opportunity to practice their skills and knowledge by completing various projects and assignments. Anyone interested in making videos as a career or the next YouTube sensation is encouraged to take this course.

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**VIDEO MEDIA PRODUCTION 2****Credit Value: .5****(#9191)****Periods Per Week: 5**  
**Prerequisites: 70% or above in Video Media Production 1****Semester: Either**  
**Open to Grades: 9, 10, 11, 12**

Video Media Production 2 is a semester long course designed to cover advanced skills and techniques of filming and editing. Students will be introduced to creative techniques, sound recording, light principles, and advanced editing techniques. Course information will be administered through lectures, textbook, and class demonstrations. Students will have the opportunity to practice their skills and knowledge by completing several different projects and assignments. Projects will be completed individually as well as in a group setting. This course is designed to build upon the knowledge and skills learned in Video Media Production 1.

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**VIDEO MEDIA PRODUCTION 1 & 2****Credit Value: 1.0****(#9192)****Periods Per Week: 5**  
**Prerequisites: See above****Semester: Both**  
**Open to Grades: 9, 10, 11, 12**

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**TELEVISION PRODUCTION 1****Credit Value: 1.0****(#9195)****Periods Per Week: 5**  
**Prerequisites: 70% or above in Video Media Production 2****Semester: Full Year**  
**Open to Grades: 10, 11, 12**

Television Production 1 is a full year long course designed to introduce students to the skills and techniques associated with the television communications. Utilizing the knowledge learned in Video Media Production 1 & 2, students will have the opportunity to expand their production skills in various ways. Advanced filming and editing projects, along with studio produced projects will make up the foundation of this course. Students will also learn the skills necessary to produce television programs within a studio environment. This course will help prepare students for Television Production 2 and the Morning Announcement Show.

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**TELEVISION PRODUCTION 2****Credit Value: 1.0****(#9196)****Periods Per Week: 5****Semester:****Full Year****Prerequisites: 89% or above in TV Production 1****Open to Grades:****11, 12**

Television Production 2 is a full year long course designed to increase the student's skills and techniques learned in Television Production 1. Utilizing the knowledge learned in Television Production 1, students will have the opportunity to produce the Morning Announcement Show for the Shaler Area Community. Students completing this course should have a solid foundation of all aspects of Television Production by the end of the year. This course is designed for any student interested in pursuing a career in the Television Broadcasting field.

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**DIGITAL PHOTOGRAPHY 1****Credit Value: .5****(#9185)****Periods Per Week: 5****Semester:****Either****Prerequisites: None****Open to Grades:****9, 10, 11, 12**

Digital Photography 1 is a semester course designed for students to learn the basics of digital photography. Throughout the course, students will be able to edit and use their own pictures in a variety of exciting projects using Adobe Photoshop. Students will learn the how to fully operate a DSLR camera that they will use for various projects, such as making a levitation photograph.

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**DIGITAL PHOTOGRAPHY 2****Credit Value: .5****(#9186)****Periods Per Week: 5****Semester:****Either****Prerequisites: 60% or above in Digital Photography 1****Open to Grades:****9, 10, 11, 12**

Digital Photography 2 is a semester course designed as a continuation Digital Photography 1. Advanced control of the DSLR cameras will be taught. Composition techniques will be explored including exciting activities including motion blur, forced perspective, and lighting. Advanced Photoshop editing knowledge will be gained as students also create compelling projects with their own photos.

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**DIGITAL PHOTOGRAPHY 1 & 2****Credit Value: 1.0****(#9187)****Periods Per Week: 5****Semester:****Either****Prerequisites: See above****Open to Grades:****9, 10, 11, 12**