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## Middle School Course Descriptions 2021-2022

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The Watershed School program emphasizes real world learning: learning not just about the world, but directly from the world and for the world. Our courses are split into two categories: expedition courses and skills courses -- with expedition classes focused on real issues and challenges in the world, and skills classes focused on developing the skills and abilities we need to address those world issues.

Expedition courses are designed to explore big questions, big issues in the world. While they have a science or humanities focus based on the nature of the questions driving the course, all are addressed in a transdisciplinary way. These deep, focused courses are more akin to learning in college and life. Skills courses help students develop research skills, communication skills, mathematical reasoning skills, and creativity, craft, and artistry. All of our courses are hands-on, project-based, and student-centered. Students work on real-world projects, interview experts, and conduct original research. And students regularly leave campus to learn in the field -- across town, across the country, and across the globe. Students develop the skills and habits they need to be ready for college and for life.

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### Middle School Science Expedition Courses

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#### **Racetracks and Rockets: Intro to Physics** ***(Trimester 1)***

How can a rocket hit a target 211 million miles away? How can we know exactly where a ball will land in the field? How does a car accelerate and why do we feel it? What forces operate the world around us? These are all essential questions we will explore in this introductory Physics class. The trimester will focus around several projects based on overarching physics concepts that will build an understanding of the natural world and engineering. We will learn about the experiments and discoveries of Isaac Newton and study his laws of force through hands-on tests and builds, reading, writing, and speaking with experts in the field. The class will explore the ways in which physics is used all around us today as well as envisioning ways it can be used into the future. Students will engage in serious scientific processes, working from hypothesis, through experimentation, to reporting.

## **The Birds and the Bees: the Purpose and the Plight of Pollinators**

### ***(Trimester 1)***

Pollinators are responsible for more than half of the food we eat. In their own search for food, birds, bats, bees and other insects help the plants that we rely on reproduce. In fact, pollinators and their plant partners have evolved alongside each other for millenia, often resulting in uniquely specific relationships. But, our pollinators are in trouble, largely due to human impact. In this course, students will seek answers to questions like: Why do we care about pollinators? Who are our pollinators? What is happening to them, and what can we do about it? Students will engage with local gardens, farms, researchers and more to better understand and protect our local pollinators.

## **Computers: Hardware to Software**

### ***(Trimester 2)***

This class will dive behind the screens we use everyday. We will break down what is behind your laptop keyboard and what is building your website design. We will then build our own computers and write our own code. The class will be using Raspberry Pi and Scratch to Python Coding. This course is designed for all experience levels. If you have never heard of RAM or Python, this class is for you. If you have, this class is also for you. We will also dive into the history of computers and the future. Computer Science offers a vast landscape of possibilities and we will create time and space in this course for students to take new skills in great directions. Throughout the course, the students will be grappling with questions such as: What place do computers have in our lives? What are some potential ways computers can help us grow as a society? Where will computers and the internet take us next?

## **Forensic Files**

### ***(Trimester 2)***

How can we use science to solve a crime? Is all evidence objective? In 1930 two women were killed on a deserted road in Texas. The murder remains unsolved, but the field of forensic science has evolved drastically since then. In this course, students will work to solve a century old cold-case by familiarizing themselves with the application of forensic science methods to find answers from the evidence all while learning a variety of laboratory skills. Students will dive into the nuances and the ethics of the use of certain testing protocols and will investigate inequities within our criminal justice system.

## **Source to Sea**

### ***(Trimester 3)***

How does water shape who we are and the places we live? How does it physically move, carve, and design the natural landscape? What impact does water have on natural and human ecosystems? Within the natural boundary of a watershed, all things - living and nonliving - are connected by the flow of water. In this course, students will deep dive into the study of the local watershed and how our landlocked state connects to the sea. Students will come to identify the impact they have on their water sources, and how water has shaped their surroundings, culture, and self, from source to sea.

## **How to Build a Bridge? Infrastructure and Urban Planning**

### ***(Trimester 3)***

This class will look at how our cities are built. How do we safely drive on a road or over a river? How do we take an elevator to the top of a 400 foot building? We will look at how cities are designed and laid out, both successfully and unsuccessfully. We will spend time looking back at how our own city of Boulder was put together and we will get to work with experts on how it will be designed into the future. The class will design model bridges and test their strength to their breaking point. Students will complete projects on public transportation, designing their own models and studying past, present, and future of urban planning around the world. We will also get to study our own American infrastructure. Step by step, we will work through the President's new plan and design our own. Along the way we will ask the question: How was that made?

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## **Middle School Humanities Expedition Courses**

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### **Belonging Matters**

#### ***(Trimester 1- All MS students automatically enrolled)***

Belonging Matters is a course on why humans have the urge for belonging and how they can fulfill that in the healthiest way possible. Students will learn about various groups in our society that have been marginalized and struggled to find the place where they belong. Students will also practice introspection while examining where and how they fit into belonging to our Watershed Community. This class will focus on students finding where they belong at Watershed and helping others feel a sense of belonging that may be lacking.

### **International Relations**

#### ***(Trimester 2- All 6 & 7th grade students automatically enrolled)***

We live in an interconnected world, but how does it really work? Over the last 70 years, nations have sought peace and economic prosperity through international bodies such as the United Nations and World Bank. Technological changes, such as the internet and green energy have changed how we interact with one another and how governments approach trade and treaties. In this course, we will participate in a model United Nations, explore the history of how nations resolved conflicts and forged peace, and study how relations among nations may look very different in the years to come.

### **Transformations of Thinking and Self**

#### ***(Trimester 2- 8th Grade students, automatically enrolled)***

Transformations of Thinking and Self is a course in developmental psychology, metacognition, and brain anatomy. It is designed to give students a deeper understanding of their mental workings while empowering them to learn how to view

cognition, emotion, and changes in their bodies and minds as a dynamic process that they can engage in and direct. In this reading-intensive course, students will have the opportunity to explore adolescent development through a variety of lenses, examining current research in neuroscience related to the brain and the implications of this understanding. Students will explore psychological frameworks used to better understand the developing mind, and make connections to their own experiences to begin answering the essential question, who am I?

### **The Colorado River: Where does the water go?**

#### ***(Trimester 3)***

This course is an introduction to the laws and policies that govern the allocation and use of water in Colorado, the West, and the U.S. Students will learn about the Colorado river and several of its tributaries such as the Roaring Fork River, Green River, Yampa River, and the Blue River. Students will also study the effects of dams and large-scale water diversion systems such as the Big Thompson Project. By learning about our local watershed, students will be able to suggest future policy about how we could better manage our water resources in Colorado and the West. As students learn about the watershed they will begin answering our essential question, How can we best manage our river systems for future sustainable use?

### **Is Everyone Really Equal?**

#### ***(Trimester 3)***

Are all youth really equal? This course will broadly explore the experiences of young adults growing up as members of different underrepresented groups within our society. Through learning from narratives and conducting fieldwork, students will begin to understand the barriers and inequalities that exist for American youth whose stories and backgrounds may differ from their own. Students will use this perspective to better understand their own story and place in our society. In doing so, we will discuss the different privileges we carry and how we can work to break down barriers of inequality and push for positive change.

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## **Writing and Technology Skills Courses**

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### **Digital Design**

#### ***(Trimesters 1 & 2 MS & HS Sections )***

Statistically speaking, the average screen time-use for Americans is 4+ hours per day. Consumption of digital media content through various outlets such as social media, websites, or education learning platforms has made our reliance on digital technologies as commonplace as breakfast, lunch or dinner. As more channels open up, so too does our access to whatever brands, companies, influencers, or content that we find ourselves scrolling through or searching for as we dive into the digital world. Who

develops the digital design content with which we engage? In this class? You do. From web design, advertising or logo development, each element of digital design harnesses the power of graphic design, user-interface (UI) and user-experience (UX) to curate content for the digital age. Using the wealth of Adobe® products\* and online software platforms, this class will provide students with the opportunity to learn the tricks of the trade, engage in the digital design process from beginning to end, and fine tune and edit their work with a web-design project or portfolio that will incorporate much of the software and skills used in the digital design career industry. \*This class may include a temporary subscription to Adobe® Creative Cloud.

## **Robotics**

### ***(Trimester 3 MS & HS Sections)***

How do engineers prepare to explore planets of our solar system unreachable by humans, or plumb the depths of the oceans without diving 10,000 meters below the surface? In this course, we will design, code, and test robotic solutions to these challenges with Lego Spike PRIME robotic kits. Students will learn the tenets of mechanical engineering, coding, and STEM applications to real world problems. Essential questions for this course include: “How can robots solve essential design problems? Will robots help create a future utopia or dystopia? Do robots have an essential role in our world? We will design robots for a multitude of functions, test them with different tasks, and culminate with a robotics fair in which students show off their creative robotic prototypes in a series of “obstacle courses.”

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## **Art Skills Courses**

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## **Cinema Studies: Documentary Filmmaking**

### ***(Trimester 1)***

What goes into making a good story/film? How do filmmakers evoke emotion and deliver a message? Students are invited to embark on a journey of both studying and making documentary films. Students will fill their storytelling toolkit with a variety of techniques and tricks as they challenge themselves to tell their own stories and those of others. As a means of better understanding cinematic storytelling, students will view scenes and clips from a variety of styles of documentary films. Students will learn the art of filming effective interviews, shooting b-roll footage, recording quality sound, writing narration, and managing editing techniques. Students will get behind the camera and make a collection of films independently and collaboratively. The class will band together as a team to partner with a group in the Boulder community as we endeavor to make a short film communicating that group's story and the work they do. Field work will include opportunities to meet documentary filmmakers and visit a production studio. In addition, we will use our long blocks to film on location with our community partners.

## **Painting and Perception**

### ***(Trimester 1)***

"We must recognize... that color is a sensation, produced in the brain, by the light that enters the eye; and that while a sensation of a particular color is usually triggered by our receiving light of a particular composition, many other physiological and psychological factors enter in." For Painting and Perception we will address the following question: What is color, and how can it be used and manipulated to create harmony, evoke light, and convey meaning? This course is focused on paint as a medium with color as the subject, but also on optics and perception. Color theory, seeing colors as values, mixing colors, understanding the difference between hue, value and intensity, looking at both harmony and symbolism, understanding how the human eye works, and how the brain interprets color are just some of the topics we'll focus on. Additionally, students will be reading and writing to both reflect on their understanding as well as deepening it. Final projects will be acrylic paintings on canvas. All projects will be differentiated for skill, interest, and understanding. We will be investigating a range of historical and contemporary artists to understand historical perspectives, innovations, and techniques. At the heart of Painting and Perception is the idea of "play" where students will make new combinations, build on others' ideas, explore metaphorical representations, discover new materials and applications, and dive into creative flow. Additionally, the course is designed to facilitate risk taking, deep concentration and effort, revision and refinement, as well as problem-solving and critical thinking.

## **From Cartoons To Graphic Novels- Visual Storytelling**

### ***(Trimester 2)***

How do stories and characters evolve to both meet and challenge the world's needs? In this course we will be exploring the language of cartoons, comics, and graphic novels in order to analyze, understand, and emulate the features that comprise the medium of visual storytelling. This course will look at the history of comics, the emergence of the graphic novel and its place in contemporary art and literature. Our ultimate goal will be to create our own graphic stories from a variety of source material, including the adaptation of classic short stories. The course will balance an investigation into three different skill sets: reading, writing, and drawing. As readers we will look at how one 'reads' graphic novels, while also reading a variety of non-graphic pieces that will act as material for possible adaptations for graphic renderings. As writers we will start with writing short comic strips in preparation for writing longer pieces. We will also look at narrative elements, as well as techniques for developing plot, character and setting. As artists we will look at how to visually depict characters to evoke action, emotion, thought, expression, and dialogue. Additionally, this course will act as an introduction to drawing where students will be immersed in techniques such as linear perspective, value, line, shape, and pencil and ink as mediums.

## **Mosaics for Justice**

### ***(Trimester 3 MS & HS Sections)***

“Shards of glass can cut and wound or magnify a vision. Mosaic celebrates brokenness and the beauty of being brought together.” - Terry Tempest Williams. In this hands-on class we will explore the ancient art form of mosaics. The course will include an investigation into art history, where we'll explore the five thousand year old history behind this medium. Students will approach the making of mosaics from a constructivist approach, where they will investigate how the materials and tools work best. Students will be responsible for making a personal mosaic, as well as a collaborative mosaic focused on a social justice issue or theme. Students will also be reading and writing to reflect on their understanding as well as deepening their understanding. Critiques, revision and refinement will be central components of this course. Additionally, the course is designed to facilitate risk taking, deep concentration, and effort, as well as problem-solving and critical thinking.

## **Ceramics**

### ***(Trimesters 2 & 3 MS & HS Sections)***

How do artists work? What roles do resilience and problem solving play in the creative process? This hands-on course is designed to introduce young makers to the artistry and craft of working with clay. Students will have the opportunity to make decorative tiles, functional tableware, and When it comes to decor, students will be introduced to underglaze painting, decal printing, sticker and paper resist, sgraffito, and impression stamping. In an effort to seek the crossroad of functional pottery and artistic ceramics, students will design vessels using a culmination of decorative techniques. Mixing elements and techniques throughout the semester will allow students to experiment with form and composition. For field work, students will visit artists in their working studios and tour ceramic exhibits. Visiting artists will bring their own unique style to class as a way of introducing new techniques and problem solving with clay.

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## **Athletic and Wellness Skills Courses**

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### **Athletics, Wellness and Leadership**

#### ***(Trimesters 1, 2 & 3)***

Athletics, Wellness and Leadership will explore mind and body wellness through physical activity, mindset work, collaboration, and reflection. Through a variety of individual and group activities, including competition and cooperation based experiences, students will explore their curiosity, courage, collaboration, and leadership skills. Students will work together to form a supportive environment by modeling a shared vision, and inspiring, encouraging and supporting others to act. Enrollment is open to all students curious about the mind/ body connection, regardless of fitness, who are eager to be active and grow in character and health.

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## **Spanish Skills Courses**

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Learning another language broadens our cultural understanding and helps set the stage to engage in global thinking, awareness, and citizenship. Rumi, a persian poet said “Speak a new language so the world will be a new world.” (actfl.org) In these courses, students will build confidence in and enjoy the exploration of Spanish language and culture in an immersion-like environment. Our goal is to facilitate the exclusive use of Spanish in different conversational contexts and to engage students in culturally relevant experiences, prioritizing proficiency over performance. In this course, students will use three modes of communication: interpersonal, interpretive, and presentational at the beginner to intermediate level of language acquisition. Small group conversations, storytelling, journaling, songs, and games are some examples of work students will do to develop their Spanish language skills. During this course, we will visit local hispanic stores, have Zoom exchanges with students from Puebla, Mexico, and do volunteer work with local bilingual communities.

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## **Math Skills Courses**

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Watershed students move through seven years of math starting with Math A in the 6th grade. The Watershed mathematics curriculum focuses on helping students develop not just computational fluency but also flexible, robust quantitative reasoning skills. Through projects and real-world mathematics, we support students to increase their mathematical fluency and ability to use math in their day-to-day lives. More and more, future citizens need a flexible understanding of mathematical thinking, with an increased emphasis on data analysis, engineering applications, and computer science. Beginning in the fall of 2021, most of our math courses will be expanded to include a focus on these emerging STEM areas. This enhanced math program will allow us to make math more relevant to our students' lives both today and in the future.

### **Watershed Math Courses**

- Math A & Introduction to Data Science
- Math B & Topics in Engineering
- Algebra 1 & Topics in Data Science
- Geometry
- Algebra 2 & Topics in Engineering
- Precalculus
- Calculus