



District
Town



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ESTRELLA FOOTHILLS HIGH SCHOOL GOODYEAR, AZ

Mr. Marc Johnson



TEACHER BIOGRAPHY

Mr. Marc Johnson is a science teacher at Estrella Foothills High School. He currently teaches three courses: freshman science, Honors freshman science, and Honors Physics. Mr. Johnson's classes feature a mixture of labs and challenges that help explore and reinforce the material he is teaching. He particularly enjoys watching students engage with the challenges he sets up for them while they try to solve unique challenges in a complete and timely manner. The combined value of quick completions and fully planned out solutions are a great way to get students to think on their feet, make decisions in a collaborative space and find novel approaches to solving problems based on their prior knowledge and experience.

Teaching Honors Physics is Mr. Johnson's favorite because of the complexity of the material and the advanced concepts he can include in their labs and challenges. It forces his students to draw on a wealth of knowledge, including prior mathematics, to combine their new physics content and problem-solving skills. Mr. Johnson believes that these problem-solving skills are an essential tool, regardless of what students study, to be able to grapple with any situation.



OUTSIDE SUPPORT

Mr. Johnson also tries to make himself available to students whenever they need help. He sports an open-door policy where students are welcome to visit his classroom to ask questions or seek help before and after school and during lunchtime. His students, especially those in Honors Physics, come by often to ask questions about homework, labs and additional practice problems or ideas. Mr. Johnson takes great pride in being able to be a resource for his students, and someone from whom they feel comfortable asking for guidance. He hopes all his students know he is there to support them as best as he can, and all they need to do is ask. Mr. Johnson maintains a "guiding rather than telling" approach to teaching and supporting students. He works to guide his students to solutions, new ideas, and through complex material rather than telling them how to get to the answer. Exploratory learning in this way also helps to teach essential problem-solving skills and strengthens students' connection with the content.

"One thing I love about physics is the problem solving aspect. It's about getting students to think about how things work. Even if they don't end up ever pursuing science, it's getting them to think and apply."

HOME OF THE WOLVES

- Mr. Marc Johnson, physics teacher at Estrella Foothills High School

CHALLENGE TIME

Mr. Johnson's labs and challenges are set up in such a way that they push the boundaries of what students know, requiring them to draw on inspiration from their own experiences and each other as a prerequisite to success. Labs allow students to explore ideas discussed in class, with a heavy emphasis on collecting and analyzing data to prove or disprove hypotheses. These labs are well structured and have in-depth guidelines for what students need to achieve, making sure they can follow a set of procedures to test their hypotheses.

Challenges are a special series of activities in Mr. Johnson's class, and they differ from labs in some key respects. Mr. Johnson's challenges are specifically designed to be free exploration activities with less limitations on how the results are achieved and a heavier emphasis on explanation and critical thinking. These tasks are more loosely defined than their lab counterparts and often incorporate elements of different content areas throughout the year and at higher levels of complexity. Students can display their mastery of content as well as explore new ideas and test the limits of their knowledge through these challenge activities while still honing their focus on collaboration and teamwork.

These challenges are a unique tool for Mr. Johnson's classroom to engage students and incentivize creative solutions and problem-solving techniques. Not only are students pushed to solve challenges, but they are also tasked with communicating their approach and highlighting their thought process which they share with their fellow classmates. Mr. Johnson also caters challenges to be relevant to current events in science and society, relating projects to holidays like Halloween or school events like prom. He tries to keep each challenge engaging and fun, often by including rewards for students.

Combined learning through structured labs and more exploratory challenges is Mr. Johnson's way of ensuring students can experience and learn through various pedagogical models. Creating meaningful connections with the learning material allows for greater comprehension and, subsequently, greater application of the content. Balancing the number of labs and challenges alongside regular instruction is something that Mr. Johnson has and will continue to refine in his teaching, adapting to student needs and providing time to more difficult subjects while maintaining mastery over fundamental content.

"I push them hard, I don't back down. I give them difficult questions and I work them up towards it. "

-Mr. Marc Johnson, physics teacher at Estrella Foothills High School

MATH, MATH, MATH

Despite not being a math teacher, Mr. Johnson inevitably teaches a great deal of mathematics. From graphing to mapping trajectories to data analysis, Mr. Johnson's science classes require a strong understanding of the math behind science and experimental methods. Math skills are essential to perform well in Mr. Johnson's science and physics courses.

These skills are important, according to Mr. Johnson, not just for his courses but for thinking and learning in general. Being able to solve challenges in the lab or activities is a combination of content mastery and mathematics skills. In other words, science is not just about the knowing; it's about the doing, and certain statistical and arithmetic skills can help students apply their scientific understanding. The labs especially have math intensive elements which make it necessary practice these skills through homework and in-class assignments.

Some of Mr. Johnson's favorite units to teach are those that require intensive math but noncomplex scientific principles. Kinematics, concerning motion and trajectories, has some of Mr. Johnson's favorite labs – but mainly for the math. The collision carts lab is one of the simpler labs to set up and perform but requires a variety of data collection techniques from which students make calculations. Collection data and making calculations with confidence are necessary skills for students to learn as they enter college-level science courses. Knowing this, Mr. Johnson spends extra time going over how to perform and analyze calculations with his students.

Mr. Johnson aims for each of his students to feel confident in their math abilities while gaining the content mastery of the science he teaches. Providing tutoring and out-of-class support is one of the ways Mr. Johnson helps his students hone their math skills. He places emphasis on a holistic understanding of the content. Being able to perform a little bit of everything gives students the best possible understanding that they can grasp any challenge, whether through teamwork and communication or data collection and analysis. 