



Topic
Science
& Mathematics

Subtopic
Biology

Understanding the Secrets of Human Perception

Course Guidebook

Professor Peter M. Vishton
The College of William & Mary



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Professor Peter M. Vishton is Associate Professor of Psychology at The College of William & Mary. He received his B.A. in Psychology and Computer Science from Swarthmore College in 1991 and his Ph.D. in Psychology and Cognitive Science from Cornell University in 1996. From 2000 to 2004, Professor

Vishton served as an Assistant Professor in the Department of Psychology at Northwestern University. He has also served as the Program Director for Developmental and Learning Sciences at the U.S. National Science Foundation and is a Consulting Editor for the journal *Child Development*.

Professor Vishton has published articles in many of the top journals in the field of psychology, including *Science*, *Psychological Science*, *Experimental Brain Research*, *Teaching of Psychology*, and the *Journal of Experimental Child Psychology*. He is also the creator of the DVD *What Babies Can Do: An Activity-Based Guide to Infant Development*.

In addition to teaching, Professor Vishton studies the perception and action control of both infants and adults. His interests include cognitive, perceptual, and motor development; visually guided action; visual perception; computational vision and motor control; and human-computer interfaces. His research has been funded by the U.S. National Institute of Child Health and Development and the U.S. National Science Foundation.

Professor Vishton has presented his research at numerous conferences and invited talks throughout the United States. He has found a variety of evidence, among both children and adults, that the nature of sensory processing is altered by the actions we choose to perform. In essence, our intention to act on something changes how we perceive it. His ongoing work continues to explore how this aspect of the human senses develops and how

the motor systems of the brain are involved in mediating the areas of the brain involved in perception.

When he isn't exploring the secret life of the human senses, Professor Vishton enjoys spending time with his family, reading, and distance running. He has completed 2 marathons and hopes to complete others in the future. He would very much like it if he could figure out how to change his perception of just how long 26.2 miles seems.

More information about Dr. Vishton and his research can be found at <http://pmvish.people.wm.edu>. ■

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Understanding the Secrets of Human Perception

Scope:

This course aims to provide you with a better understanding and appreciation of your own senses. It explores all 5 of the traditionally defined senses—sight, hearing, touch, taste, and smell—and explains that human beings actually possess far more than these 5. By showing you how to consider the human senses through the lens of scientific inquiry and giving you a better understanding how the senses function, this course will help you experience the world around you more vividly and in more detail.

A sip of fine wine will taste good whether you have studied the human senses or not, but studying the senses has the capacity to greatly enrich your experience. After completing the course, therefore, you will be aware of how the sense of taste decodes different aspects of the wine, as well as how your senses of smell and vision contribute to that taste experience. You will also possess some understanding of how the emotion and memory systems of your brain respond to the glass of wine. A similar story can be told for our sensory experiences of colors, works of art, the faces of the people around us, and thousands of other elements of our world. We are surrounded by rich, complex, beautiful sensory experiences. This course aims to explain and enhance those sensory experiences.

This course takes an interdisciplinary approach to better understanding human sensation and perception. The 24 lectures are loosely organized into 5 sections. We begin with a physiological, neuroscientific approach to the senses. We consider the equipment the human sensory systems contain and how these components work individually and collectively to produce sensory perceptions. The next several lectures consider vision, building on our physiological knowledge to explore different aspects of this important modality to consider how we sense motion, depth, and color. In the third set of lectures, we will consider other modalities of sense perception—that is, we shift our focus to the senses of taste, smell, hearing, and touch. We discuss how these senses work in real-world situations as well—for instance, to mediate speech perception and pain. We next turn our attention to perception

in context, continuing to build on these foundations by examining how the sensory systems work in complex, real-world situations. We consider, for instance, how our sensory experiences are influenced by attention, learning, and action behaviors.

Finally, we will be putting it all together. The last group of lectures will emphasize how all of the senses cooperate to produce our perceptions of the world around us. To name just a few examples, the course will explore magic, illusions, emotion perception, and how scientists have developed methods for fixing and replacing damaged sensory systems. ■