This studio and seminar course explores the basic principles of food biochemistry, enzymology and food processing and how they relate to memory, the senses and the processing of information. Students will also learn basic principles of molecular gastronomy and modernist cuisine as framing devices for understanding how food also functions in the context of bodily health, environmental health as well as cultural and political narratives. Our food system consists of more than food production and consumption and this class will address how science and food science plays a more integral role in this system and how this knowledge can be mined for work that creatively and functionally contributes to this emerging field. Assignments for the class will be based on the incorporation of food science into design and technology projects that uses food as a substrate to explore and illuminate information within the food system. Workshops involve using liquid nitrogen + hydrocolloids as well as creating performative + deployable food objects and a Futurist meal.
Week One  
Introduction to Course 
The Homunculus 
The Food System

Week Two  
The Senses 
*Scientific – biological context for the senses  
*Historical – chronology of the evolution of food and the senses  
*Phenomenological – experiencing the world through our senses  
*Aesthetic – the role of art and the senses on food  
*Gustatory – sensory system for the sense of taste

Readings: Excerpts from *The Physiology of Taste* by Brillat-Savarin, “The Madeleine” by Marcel Proust, “Under the Jaguar Sun” by Italo Calvino; “On the Standards of Taste” by David Hume

Homework: Create a digital Homunculus of yourself

Week Three  
The Biochemistry of Food 
*Carbohydrates, Fats + Lipids  
*Water as basic constituent of all foods  
*Enzymes and Amino Acids  
*Rheology + Viscosity + Elasticity

Workshop: Chromatography  
Working in Groups Students will Devise + Implement Tests on the Polarity + Solubility of Artificial vs. Natural Colors
Week Four  How We Taste: The Nose

*Olfaction – the physiology of smell
*Smell/Taste Relationships – Proustian connections, physiological connections, scientific connections
*Synasthesia – how taste and smell can be

Readings: “There is More Than Meets the Nose: Multidimensionality of Odor Preferences” by Claudia Damhuis, Ph.D., “Genetic Differences in Sense of Smell Identified Through Asparagus Urine Odor” from Monell Chemical Senses Center, excerpts from The Emperor of Scent by Chandler Burr and “The Taste Makers: The Secret World of the Flavor Factory” by Raffi Khatchadourian.

Workshop: Tip of the Nose Test
Working in Groups Students will run blind experiments with Food Scents to understand olfaction in the context of experience, memory and surroundings.

Due Week Five: Two Paragraph Final Project Proposal (Must contain specific conceptual idea as well as plan for articulation.)

Week Five  How We Taste: The Mouth

*Taste Buds, Umami and Fat – our sense organs and how they work
*From baby food to sous-vide the evolution of our taste mechanisms

Readings: “How Enzyme in Saliva Shapes How We Sense Food Texture” “Enhanced Sweet Taste: This is Your Tongue on Cannabis”, “Variants of Umami Taste Receptor Contribute to Our Individualized Flavor Worlds” from Monell Chemical Senses Center

Workshop: Blind Tasting Workshop - Divide into Groups
Understanding how taste works without other sensory cues
Week Six

Cultural History of Taste

*The Raw and the Cooked – Evolution of Culinary Practices
*From Myths to McDonalds – how tastes are perceived and how they have changed
*The Twinkie Defense – the role of foods in culture, theory and practice

Readings: “Mulberry Omelette” by Walter Benjamin; How We Eat: Appetite, Culture and Psychology of Food by Leon Rappoport and Twinkie Deconstructed by Steve Ettingerj

**Due Week Eight: Final Project Proposal with Outline for Research + Completion**

Week Seven

How We Taste: The Hand/The Eye

*Cuisine as Architectural Invention – the building blocks of food
*Food as Political and Social Discourse – food and advocacy

Readings: The Architect, The Cook and Good Taste Hodgson and Tokya editors; Eating Architecture Horowitz and Singley, editors and The Futurist Cookbook by Marinetti

Homework: Students will create two versions of a Futurist Meal
An analog version and a digital version

Week Eight

Culinary Physics + Edible Infographics

*Science in the Kitchen = chemicals and our food
*Test Tube Tator Tots = food produced in a laboratory
*Food in Outer Space = Tang and beyond


Workshop: Working as a Class with Liquid Nitrogen
**Week Nine**  
**Food, Art and the Senses**  
*Philosophical Aesthetics – art practice in the appeal of food*

**Readings:**  
“Playing to the Senses: Food as a Performance Medium” by Kirshenblatt-Gimblett, Barbara; “Food Porn” by Molly O’Neil, “The Aesthetics of Smelly Art” by Larry Shiner and Yulia Kriskovets

**Workshop:**  
Project Steak Knife – creating performative food projects in groups determined by me based on final project concepts

**Week Ten**  
**Terroir – The Taste of Place**  
*European provenance of terroir and how those traditions, rituals and conventions can be examined within the context of the cuisine and agriculture of the United States.*

**Workshop:**  
Local flavor tastings – wine, oysters, cheese, meats, produce

**Present Progress of Final Projects to Class**

**Week Eleven**  
**Flavor Tripping**  
*Genetics and Taste, Supertasters  
* Food Industry and Mouthfeel – food design and our tastebuds  
*MSG, Artificial Flavors and Sensory Perception  
*Miraculin and Synsepalum dulcificum*

**Lab and Workshop with the Miracle Fruit**

**Readings:**  
“A Man of Taste” by D.T. Max; “A Tiny Fruit That Tricks the Tongue” by Patrick Farrell and Kassie Bracken and *The Fifth Taste: Cooking with Umami* by David and Anna Kasabian

**Week Twelve**  
**Lab/Work/Testing of Final Projects**
Week Thirteen  Final Critiques

Week Fourteen  Final Critiques