Courses available:

**Lighting up the world with color**

In more recent years, light-emitting diodes (LEDs) have begun to permeate every aspect of modern life - from indicator lights on a car dashboard to TVs and computer monitors. While it would be difficult to imagine life today without LEDs, how do they actually work? This class will focus on understanding solid-state lighting technology as well as relating this to how we as humans see and perceive light and color. We will learn how scientists define these topics as well as how they apply to real world applications such as theatre lighting and display technology. (Keywords: Materials, Lighting, Electrical engineering)

**A World of Crystals: How Nature Creates Order from Chaos**

When we think of crystals, the thought of a glimmering jewelry display might pop into mind. But a staggering amount of our technology is built on crystals; processors, building materials, lighting, electricity generation... The list is endless. You are surrounded by crystals, in fact, you're probably using a whole array of them to read this. Atom by atom, we can manufacture crystals that nature only dreams of (and now you can too). In this class, we'll explore the physics and chemistry of crystals, learning concepts such as symmetry, diffraction, and diffusion. We will explore how researchers grow materials with applications stretching from medicine, quantum computing, magnetism, and more. We will have a combination of computer exercises, socially-distanced crystal growth (DIY!), and in-class puzzles to help explore the world of crystallography and crystal growth. (Keywords: Chemistry, Materials Science, Quantum Foundry) UCSB NSF Quantum Foundry through Q-AMASE-i program award number DMR-1906325

**Plasmas: The 4th State of Matter**

Commonly introduced as the 4th state of matter, plasmas are not only ubiquitous in the universe, but comprise most of the visible matter. While perhaps being far removed from direct everyday experiences, they can still be found everywhere around us. Plasmas are responsible for many space phenomena such as auroras and solar winds - in fact, stars are just big balls of plasma! They are also a key avenue towards exciting future applications like nuclear fusion reactors. In this course, we will give a brief introduction to the fundamentals of plasma physics and explore the wonderful phenomena associated with them. (Keywords: Plasmas, Physics) NSF AST-1911198

Online Applications are due September 27 and classes start October 10!

http://sst-csep.cnsi.ucsb.edu/

It's fun, it's free and there is no homework!