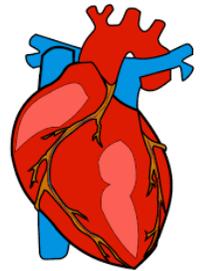


# USTEP 2022 Course Catalog

## Cross-Kingdom Hearts: Intro to Tissue Engineering

How did scientists make a working heart...out of a spinach leaf? Plants and animals are very different things but have important fundamental similarities. Tissue engineers – scientists who solve problems in human medicine – often look outside the box for ideas to solve problems.



This class will cover how a humble spinach leaf is transformed into the most important organ in the human body. Students will learn the important ways in which plants and animals are related, see how those similarities have been used by tissue engineers, and conduct their own tissue engineering experiment.

## Construction and Climate: Building for Natural Disasters

Come solve structural challenges as a civil engineer for the day! In this class, we will learn how buildings are engineered to survive major natural disasters, like earthquakes and hurricanes, through a building activity on structural stability.



Gain firsthand experience with how the earth, construction, and engineering work together to build communities that can withstand the most powerful storms. Bring your creativity and curiosity!



## Introduction to Computer Programming

Ever wonder how the computer games, applications, and websites you use every day actually work under the hood? In this class, we will be talking about what computer programmers and software developers do on a daily basis, and will dive into some of the basics of the Python programming language. Towards the end, you will get the chance to write your own programs and show off your computer science skills!



*This class requires participants to bring their own computer.*

## Exciting DNA Extraction!

Deoxyribonucleic acid (DNA) is a molecule that contains the genetic “code” that makes us unique. DNA is found in nearly all living organisms, including your food! This class will focus on a hand-on activity that uses house-hold materials to extract DNA from fruit. Students will also learn about the basic structure and function of DNA, and how Biomedical Engineers utilize DNA to help solve medical problems.



## Local Charlottesville Ecology

Are you curious about nature? Do you wonder what birds are making all those pretty sounds? Or what trees line the side of the road? Do you hear a lot about environmental problems but have no idea how they are going to get fixed? Take Local Charlottesville Ecology! In this course, you will get a quick survey on ecology and then dive into details about the network of species that live all around you. Then, you will get to work together and design a plan to solve a local environmental issue.



## Environmental Stewardship in Earth Cycles

In this class, you will learn about two of the earth's most important natural cycles: the water cycle and the carbon cycle. In addition to learning about these cycles, you will learn how the day-to-day life of humans can change those cycles! By the end of this class, you will understand two of the natural Earth cycles, the impact humans can have on the Earth, and ways that we can all live sustainably.

