

**American University**  
**OLLI Course 405 “Air We Breathe” Fall 2022**

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**Course/Lecture Description:** We breathe without thinking even as we navigate tides and rivers of air without a notice. So here we gain an appreciation of air as a biota-rich medium while learning how to live better within closed and open spaces in our temperate humid climate. The course starts with a science fiction story to explore science literacy and how science and society interact, using air-based examples. Next is the atmosphere, its turbulence and its layers. Within this context, we explore what types of airborne life and how they interact with other particles. We then delve into its strange history. This is applied to epidemiology, air quality, national security, pollen bursting, rise of neo-allergens and thunderstorm asthma. We end with best practices for how to co-exist with airborne life in this temperate climate and its seasonal change. This course is taught from the perspective of airborne particles, not health care.

**Module 1) Science fiction, science fact.** We introduce science literacy basics and how science interacts with society opening with science fiction story “Atmosphera Cognita”. Author Neal Stephenson writes about story characters who build a tower 20 km high. What would we expect to find at different altitudes along that tower and why?

**Module 2) Atmosphere’s layers.** The atmosphere’s layers are described, explored and experienced using science and other ways of knowing. This is a 360-degree view using ancient thinkers, explorers, citizen-science, aviation, research and those who survive near-death experiences.

**Module 3) Atmospheric life and other particles.** Microbial life in the atmosphere is complex with a strange technology-driven history. These are invisible yet omnipresent in the air we breathe. Current topics include epidemiology, air quality, pollen bursting, thunderstorm asthma, rise of neo-allergens.

**Module 4) Best practices for a temperate humid climate.** How to co-exist with atmospheric life forms in closed spaces whether at home, work or public transport. Learning how to live better in our Eastern Seaboard climate is the aim.

Each module has two classes and a presentation with optional reading. To look over before each class. Each class closes with a homework question for discussing in the next class for a "Stone Soup" approach to mutual learning. We educate one another.

**Reading for our first class:**

Please read the Kindle short story “Atmosphaera Cognita” by Neal Stephenson.

**Instructor Bio.** Dr. Williams is a research professor in the Department of Environmental Sciences at American University. She has a doctorate in forestry with a minor in genetics from North Carolina State University in 1986 and in the 2021, she completed a MA degree in Global Studies at UNC-Chapel Hill. While her career has been mostly academia, she has worked in federal government, Fortune 50 corporate research and consulting. As a tenured full professor at Texas A&M Faculty of Genetics, she has been a visiting professor at several other universities and served as a AAAS Fellow in Science Diplomacy and science advisor at U.S. Dept of State’s Bureau of European and Eurasian Affairs as well as R&D project manager for Weyerhaeuser Company. In 2019, she was a Fulbright Scholar to Russia’s Sukachev Institute of Forest in Krasnoyarsk Siberia. Her ecology and evolution research contributions have been recognized with the John Simon Guggenheim award, the German Academic Service, Bullard Fellow at Harvard among others. Her current project is modern desert dust storm content in the Middle East; she has written over 100 papers and three books.