



**ATP<sup>3</sup> Workshop Spring 2017**  
**Principles and Processes: Algae Culture Maintenance, Production and**  
**Downstream Processing**



**May 15-29, 2017**  
**at Santa Fe Community College,**  
**Santa Fe, NM,**  
**Los Alamos National Lab and the New**  
**Mexico Consortium, Los Alamos, NM**

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**Principles and Processes:  
 Algae Culture Maintenance,  
 Production and Downstream  
 Processing**



**When:** May 15-19, 2017

**Where:** Santa Fe Community College  
 6401 Richards Ave., Santa Fe, New Mexico 87508  
 New Mexico Consortium Biological Laboratory  
 100 Entrada Drive, Los Alamos, NM 87544

**Instructors:** Tom Dempster (AzCATI)  
 Schonna Manning (UTEX)  
 Several SFCC and NMC researchers (TBD)

**Cost:** \$1600 (includes training, materials and 3 lunches)

The Spring 2016 ATP<sup>3</sup> workshop will occur May 15th-19th at Santa Fe Community College (SFCC), Los Alamos National Lab (LANL), and the New Mexico Consortium (NMC). These unique facilities will give participants incredible insights into aspects across the algae value chain and the food, energy and water nexus. Lectures will cover the fundamentals of managing microalgal cultures, culturing techniques, measuring biomass, harvesting and processing technologies, as well as life cycle analysis and operations at the production scale. Participants will have opportunities to work in the laboratory and learn how to measure culture density (cell counting and optical density), use a light and fluorescence microscope, use flow cytometry, perform gravimetric analyses (dry weight and ash-free dry weight), and techniques to analyze biomass compounds.

Join us while we learn about algae at LANL and NMC, a leading national lab, and the impressive algae testbed and downstream capabilities at SFCC. Participants will hear from SFCC and LANL/NMC research scientists and tour state-of-the art facilities at these workshop sites. Topics presented are relevant to those interested in obtaining a broad overview on the biology, growth and commercialization of microalgae. Participants are encouraged to ask questions, share information and network. Printed and electronic materials and a certificate of completion will be provided. Enrollment is limited to 15 participants on a first-come basis. For more information about this and future workshops please visit [www.atp3.org/education](http://www.atp3.org/education).

**Tentative Agenda**

**Day 1: May 15<sup>th</sup> (1 pm – 5 pm)**

Overview of ATP<sup>3</sup>, AzCATI and UTEX  
 Tour of Santa Fe Community College Algae Testbed  
 Introduction to Microalgae

- Lab Activities: Field sampling and light microscopy to observe diverse microalgae

**Day 2: May 16<sup>th</sup> (8 am – 5 pm)**

Overview of Algae Research at LANL & NMC  
 Practical Applications: Products and Bioremediation  
 Fundamentals of Culturing Microalgae  
 Measuring Culture Density and Growth Rates

- Lab Activities: sampling from open ponds; measuring culture dry weight (DW) and optical density (OD)

**Day 3: May 17<sup>th</sup> (8 am – 5 pm)**

Screening for Desirable Characteristics  
 Comparison of Cultivation Systems  
 Principles of Scaling Up Cultures  
 Culture Monitoring and Mitigation of Contaminants  
 Principles and Operation of Flow Cytometry

- Lab Activities: flow cytometry; measuring ash-free DW

**Day 4: May 18<sup>th</sup> (8 am – 5 pm)**

Harvesting, Dewatering and Biomass Processing Methods  
 Routine Biochemical Analysis  
 Considerations for Life Cycle and Techno-Economic Analyses  
 Bioremediation of Wastewater

- Lab Activities: analysis of lipids using thin-layer chromatography; overview of harvesting, dewatering and processing instrumentation; introduction to data entry and graphical analysis

**Day 5: May 19<sup>th</sup> (8 am – 11 am)**

Data Analysis and Discussion of Results  
 Sources of Current Industry Information  
 Workshop Conclusion and Distribution of Certificates