Example Module: 
Investigating Arabia Mountain: 
A Molecular Approach

Introductory Biology Laboratory 
by Nitya Jacob 
Oxford College 
(giving another presentation)
1) Literature Research – Proposal
   “Thinking Time”
   (Student ownership)

2) Sample collection

3) Laboratory bench work

4) Data analysis
   “Thinking Time”

Connection to Biology 141

Investigating Arabia Mountain: A Molecular Approach

5) Communicating Evidence
   (Student ownership)
Piedmont Virginia Community College
Sophomore Capstone Research Project

• Science 299 – Required for A.S. in Science degree (Biology, Geology, Chemistry, Physics)
• Semester-long independent research project & poster presentation
Institutional Organization of Science 299

• Faculty coordinator (bearing teaching credit)
  – 3 organizational meetings throughout semester,
• Individual faculty members & lab support staff supervise students
  – 2-3 students per faculty . . . though highly variable
  – Course offered Fall & Spring
    • 6 students Fall 2011,
    • 18 students Spring 2012
• Student outcomes:
  – 15 of 18 students from Spring 2012 course transferring to 4-yr schools in Fall 2012 and planning science majors
A sample of projects (2012)

• Gina Baldi (Biology): The Efficacy of Garlic as an Antimicrobial against *Escherichia coli*, Ampicillin-Resistant *Escherichia coli* and *Staphylococcus aureus*.  
  (transferring to University of Virginia; summer NIH research student at Johns Hopkins)

• Martin Edwards (Chemistry): Synthesis of Prilocaine Hydrochloride from Toluene  
  (transferring to University of Virginia)

• Jolie Nyiramahirwe (Biology): The Effects of pH on Termites and Protozoans  
  (transferring to Virginia Commonwealth University; summer researcher at Univ. Virginia’s Astrochemistry program for minority students)

• Shereena Sylvester (Biology): Interactions between Antibiotics and T4 Bacteriophage against *E. coli*  
  (post-baccalaureate student, enrolling in graduate health program)

• Jonathan Vaughan (Geology): The Effect of Density on the Velocity and Depositional Patterns of Turbidity Currents  
  (transferring to James Madison University, planning geology major)

** No physics this year, but we have had physics projects in the past