



```
install.packages("TeachR")
```

```
makeExpert = function(student, tools=NULL){  
  expert = teach(student, tools="ecoinformatics")  
  return(expert)  
}
```

If only there were a package for that...

Ecoinformatics education for everyone

Drew Kerkhoff

Kenyon College

(Not just for grad students!)

Why?



It may help you get a grant...



Core Competencies and Disciplinary Practice

Fully 1/3 directly related to *what we do!*

It may help you get a grant...

Core Competency	Ability to use quantitative reasoning	Ability to use modeling and simulation
Examples of Core Competencies Applied to Biology Practice	Developing and interpreting graphs Applying statistical methods to diverse data Mathematical modeling Managing and analyzing large data sets	Computational modeling of dynamic systems Applying informatics tools Managing and analyzing large data sets Incorporating stochasticity into biological models

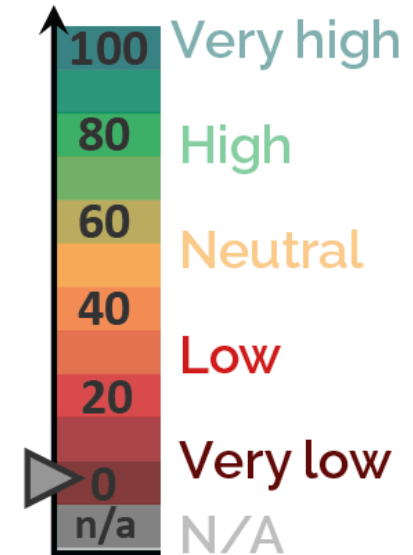
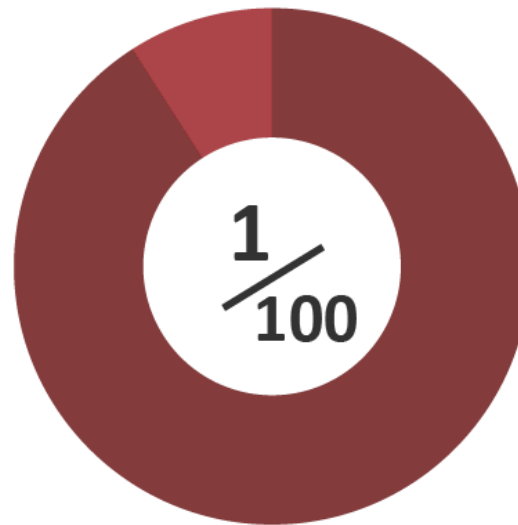
Donald Trump

Climate Science Understanding



photo by Michael Vadon

The future depends on it...



 ClimateFeedback.org

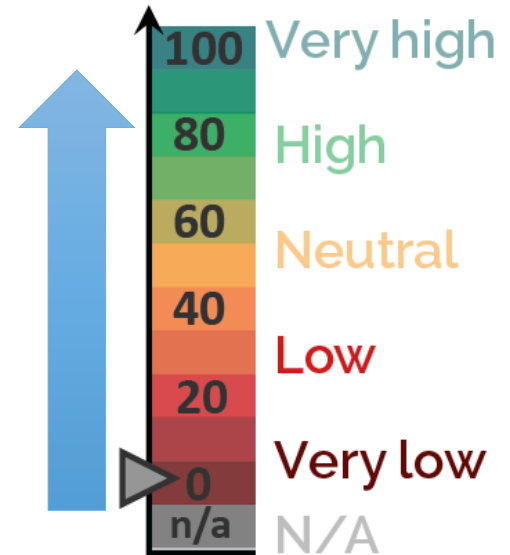
Steve Farmer, Science Teacher

Global Change Science Understanding

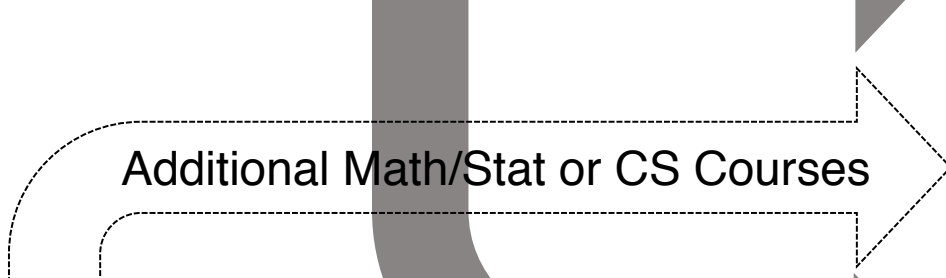
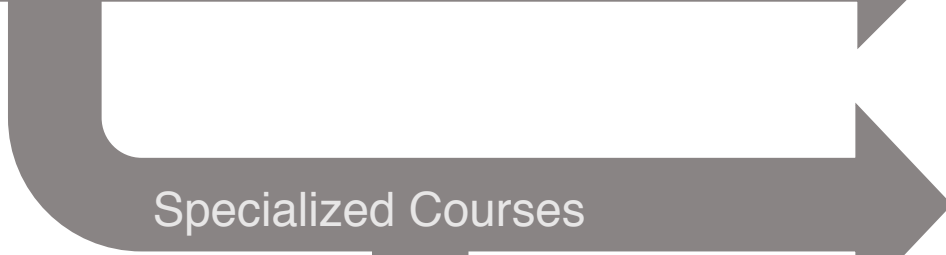


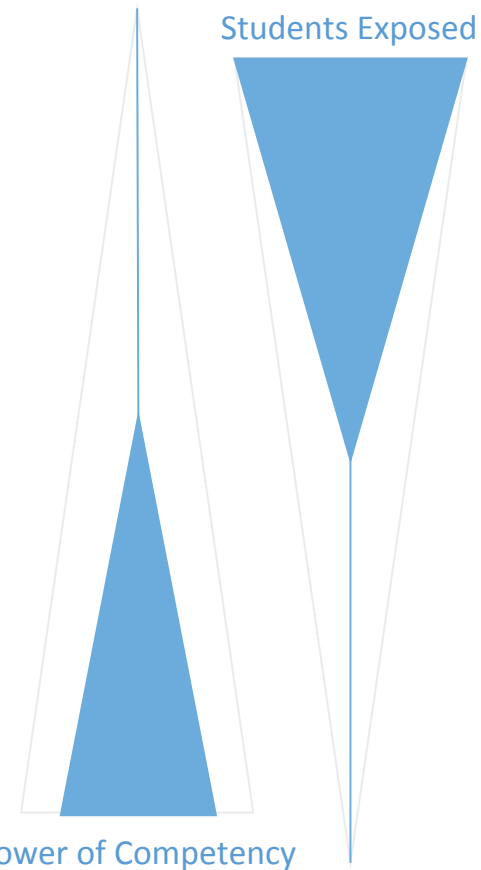
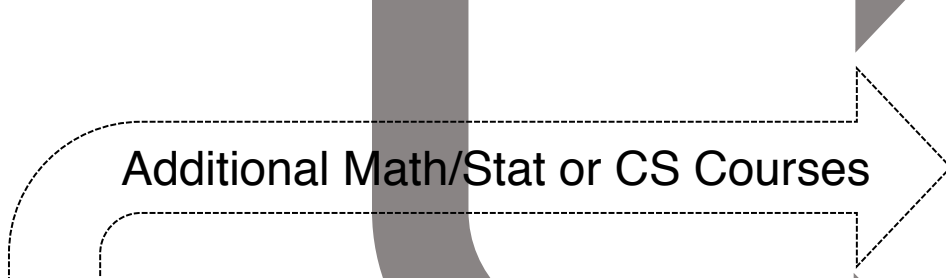
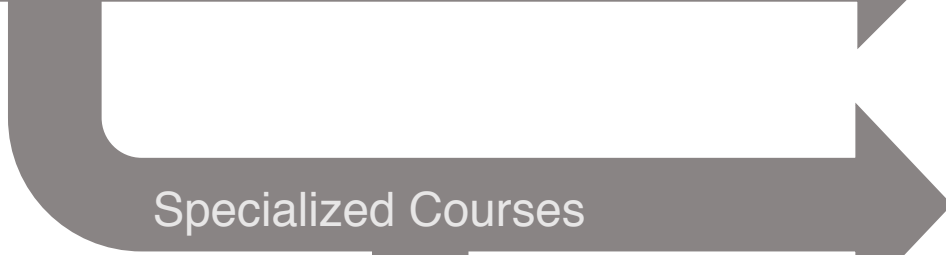
If you had never used a microscope, how would you feel about “cell theory”?

When we don’t understand the mechanisms of evidence, it is easy to dismiss scientific insights as “just a theory.”




The future depends on it...





What are the key concepts/
competencies of ecoinformatics?



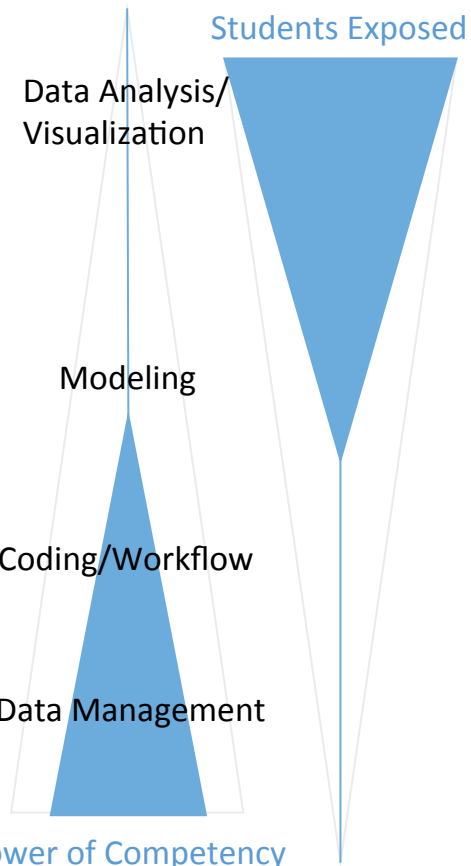
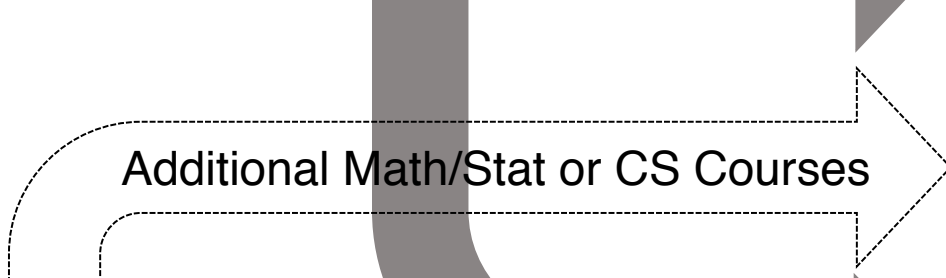
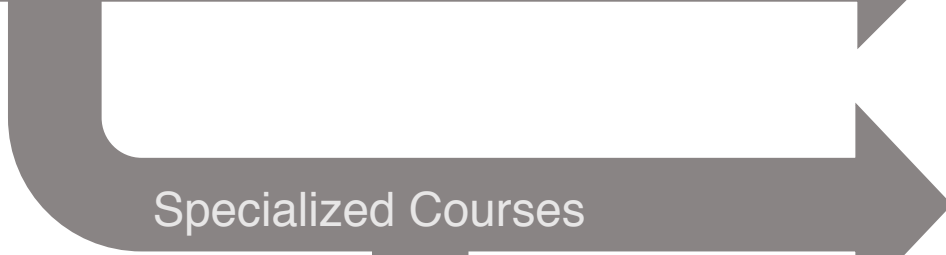
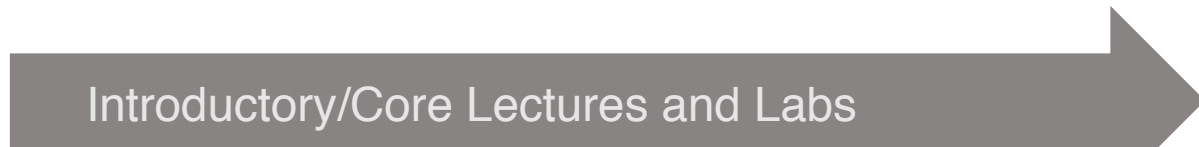
What are the key concepts/ competencies of ecoinformatics?

- Coding and reproducible workflows
- Data management and manipulation
 - Multi-source
 - Large datasets and multiple data types (data.frame, spatial, raster, phylo)
- Data visualization/analysis
- Modeling



What are the key concepts/ competencies of ecoinformatics?

- Coding and reproducible workflows
- **Where do we currently find them (if at all)**
 - **in undergraduate biology curricula?**
 - Large datasets and multiple data types (data.frame, spatial, raster, phylo)
- **What are the barriers to incorporating them?**
- Modeling



Introductory/Core Lectures and Labs

Specialized Courses

Additional Math/Stat or CS Courses

Research

Data Analysis/
Visualization

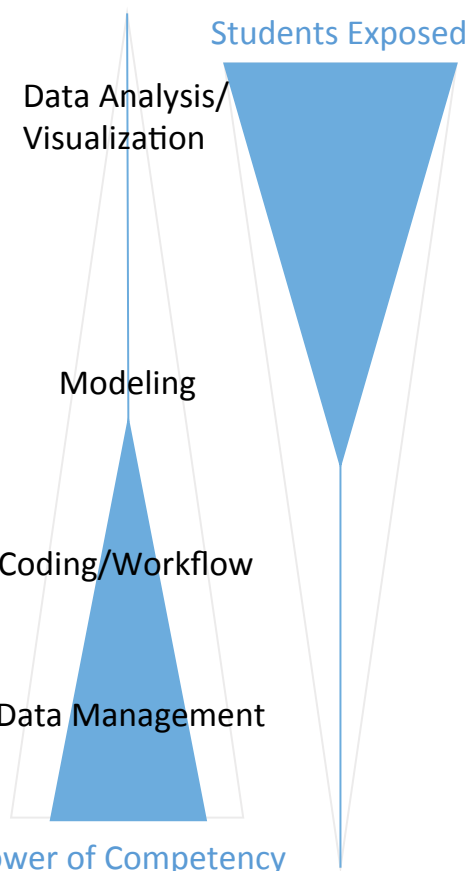
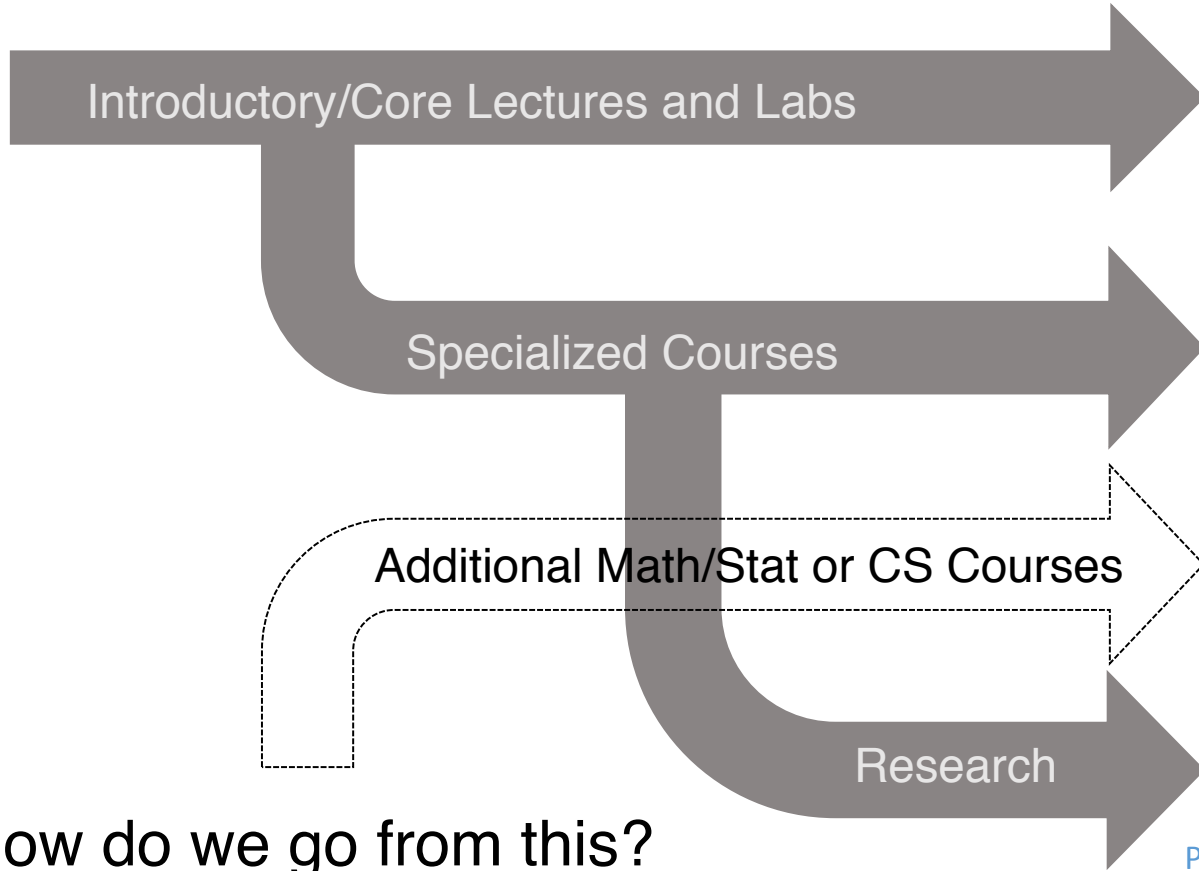
Modeling

Coding/Workflow

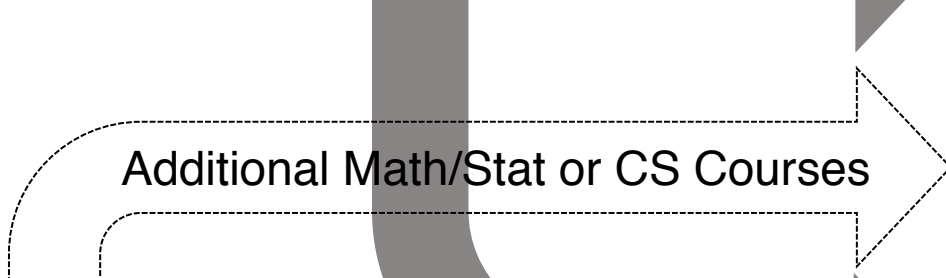
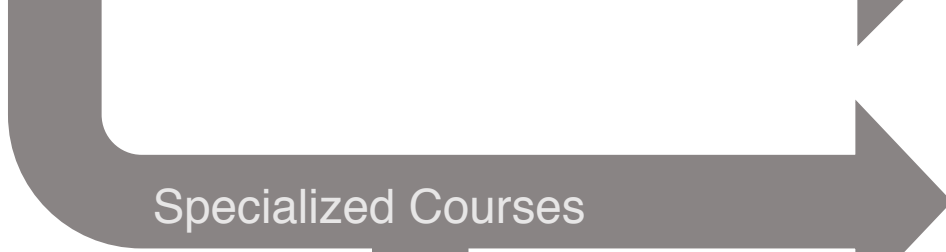
Data Management

Students Exposed

Power of Competency



How do we go from this?



To this?



