Introductions ...

Let’s start with a few not-too-difficult questions:

Q1 : Why did you enroll in this course?
Q2 : What will you learn?
Q3 : What will you not learn?
Q4 : What do you want to learn?
Now on to a few a-bit-more difficult questions:

Q1: What is bioinformatics? What are the main “branches” of bioinformatics?

Q2: Are bioinformatics and computational biology the same thing?

Q3: How does bioinformatics differ from or is similar to ...

- Machine learning
- Wet lab bio or chem experiments
- Computer Programming
Introductions ...

My goals for this course ....
Knowledge assessment

You have 15 minutes to answer 4 questions ...
Preliminaries: Course Website

http://facultyweb.cs.wwu.edu/~jagodzf/teaching/csci474

- A hands-on, project oriented class
- Lectures
- Labs
  - Using ‘existing’ tools
  - Creating/writing our own code
- Reading and summarizing historically important and current research articles
- A single “group” in-class, closed notes, closed book exam
- A course project

- Sequence alignment
- Scripting languages, shell scripts, python
- Phylogentics, genomics, proteomics
- Molecular Dynamics
- Structural bioinformatics
- Algorithm development
Fraser Lecture Series 2016
The Big Data Revolution in Human and Environmental Health

Wednesday April 6
Public Talks, 6:00 – 7:30, at Mount Baker Theatre

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Attend one of the public or WWU lectures and/or register and attend a workshop ... 5% of course grade
We start with the data …

All of us in this room were alive when these articles were published in Science in 2003 and Nature in 2004.

What does it mean to sequence a genome?
We start with the data ...

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Key terms: nucleotide, DNA
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What does it mean to sequence a genome?

Key terms: nucleotide, DNA

Thymine
Adenine

ACTG

Cytosine
Guanine

Western
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Key terms: nucleotide, DNA

ACTG

TGAC

Thymine

Adenine

Cytosine

Guanine

[Diagram with nucleotides and DNA structure]
We start with the data ...

What science can be “done” with the sequences of multiple species?

Q: What are a few observations of the above data?
We start with the data ...

What science can be “done” with the sequences of multiple species?

In-class exercise (handout) ... and discussion
We start with the data ...

What science can be “done” with the sequences from multiple individuals of the same species?
We start with the data ...

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Q: What is the name for a 3-base pair sequence?
We start with the data ...

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What science can be “done” with the sequences from multiple individuals of the same species?
Biology and Chemistry Primers