

# Analytical Workflows

## IB 516

Developed by Mark Novak and Ben Dalziel

Dept. of Integrative Biology  
Oregon State University

# Overview

Analytical  
Workflows

Philosophy

Course  
Outline

Website & Schedule

Syllabus

Accountabilibuddies

Accounts &  
Apps

Required

Project  
Proposals

Our hope

## 1 Philosophy

## 2 Course Outline

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# Course Principles

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## Automation

Doing science involves repetition at multiple levels.  
Automation is more efficient and reduces mistakes.

## Reproducibility

Science should be reproducible, by others and you.  
Your work must be *readable, organized, and self-contained*.

## Correctness

Science's limitations are human.  
We must work in ways that protect against 'bugs'.

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<sup>1</sup>See Allesina & Wilmes 2019

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## Simplicity

Analyses should be coded as simply as possible.  
Clever and readable are often at odds.

## Openness

Science is a worldwide endeavor.  
It, and access to it, should be free and equitable.

## Science as Software Development

Science is a *process* - no final product, just versions and updates.  
Software developers have tools to help.

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<sup>1</sup>See Allesina & Wilmes 2019

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`https:  
//github.com/analyticalworkflows/TeachingMaterials/`

# Accountabilibuddies

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- Weekly check-in
  - *goals/deadlines, accomplishments, sticking-points*
  - *final 10 min. of every 2nd class*
- Randomized pairing
  - *re-randomized week 6*



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# What you'll need

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## Software

- Git
- L<sup>A</sup>T<sub>E</sub>X

## Accounts

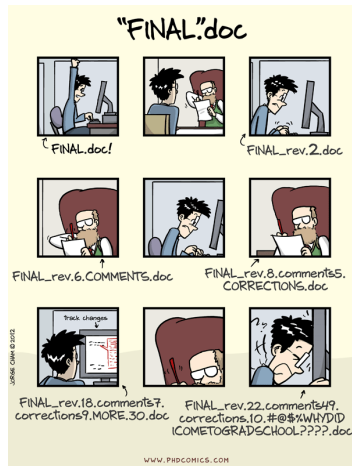
- GitHub<sup>1</sup>

## L<sup>A</sup>T<sub>E</sub>X editor

- Stand-alone  
*TeXstudio, Visual Studio Code,...*
- Online  
*OverLeaf, Papeeria, TeXpage,...*

## Git GUI

- Sourcetree, R Studio, GitHub Desktop, ...



<sup>1</sup>Please send me your username.

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# Project Proposals

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## Primary Goal

To develop more effective research skills.

## Secondary Goal

To make significant progress on your thesis.

## Our belief

We can achieve both in this course!

Let's get started!

.../TeachingMaterials/classes/ProjectProposal

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# We're all learning...

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- Be kind to yourself
- Support each other

## Integrity

Doing the right thing, even when no one is watching.