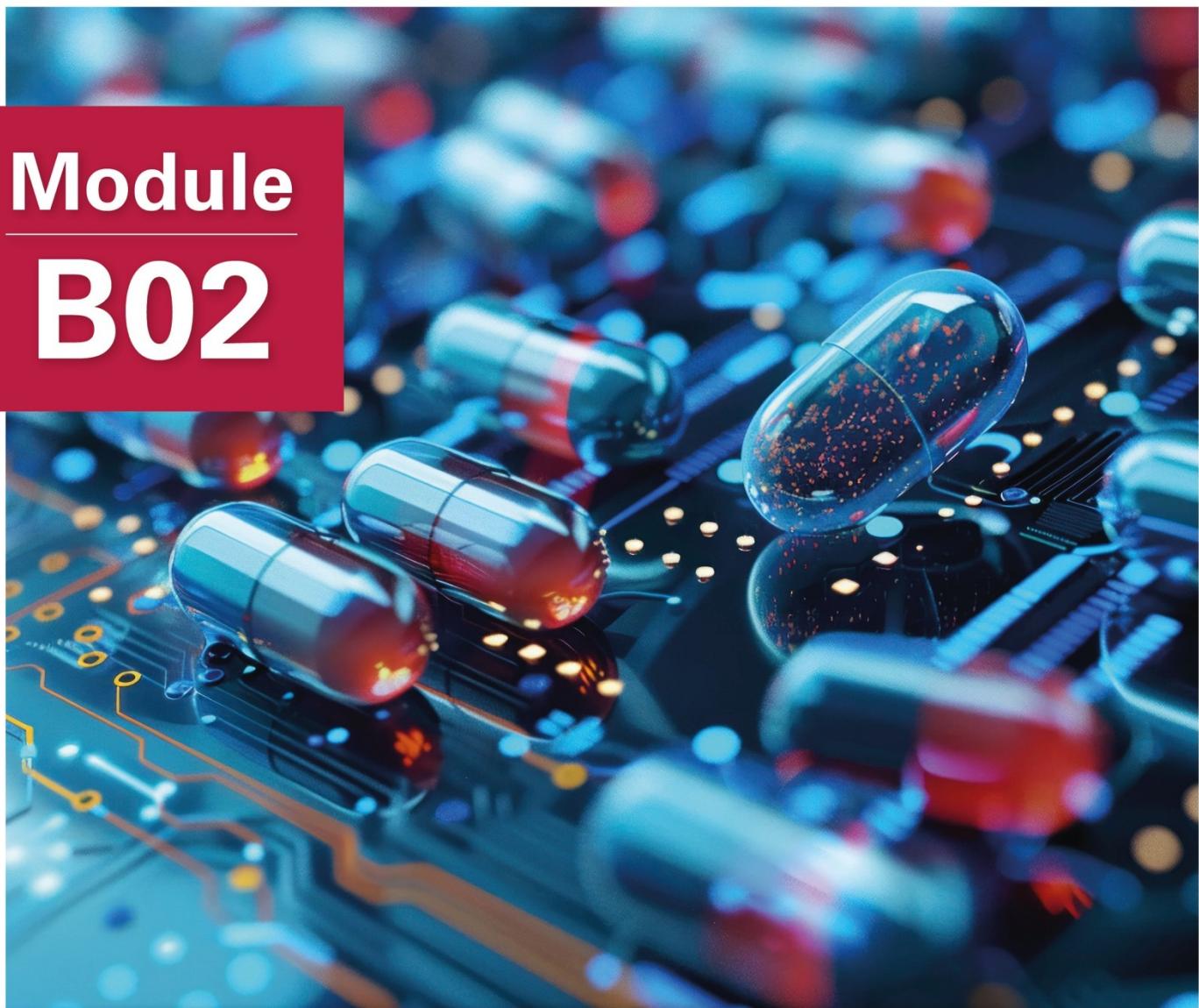


Module **B02**



Bioinformatics Foundational Course

Introduction to Version Control

NGS Academy for the Africa CDC

Module B02

Introduction to Version Control

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Module last updated:

December 2024

Suggested or approximate number of sessions	2
Suggested or approximate total learning time	4-6 hours
Target audience	Bioinformaticians and IT personnel
Delivery format	Lectures, videos
Level of the module	Introductory



Contributors

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Suggested prerequisite module(s)

- [Module B01. Introduction to Unix/Linux, Command Line, and Shell Scripting](#)



Module description

This module covers topics around Github, which is a code hosting platform for version control and collaboration. There are three primary use cases for using a version control system like Github in science. Probably the most important use-case for new users is documentation. For those transitioning from a wet-lab, git repos can be thought of as the equivalent to a web-lab notebook, where every command performed in a bioinformatics analysis is recorded with an explanation as to why it was performed, when it was performed (date) and where it was performed (pwd). In this module, participants are introduced to the following topics and/or concepts:

- 
- Introduction to version control
 - Version control systems, and what they allow you to do:
 - Track changes made to each file
 - Revert the entire project or a single file to a previous version
 - Review changes made over time
 - View who modified the file
 - Collaborate with others without overwriting their work or risk file corruption, etc.
 - Have multiple independent branches of the same repository and make changes without affecting others' work.
 - Installing Git and creating a Github account
 - Preparing your working directory
 - Creating a local Git repository
 - The purpose of the .git directory
 - Tracking changes, go through the modify-add-commit cycle for one or more files
 - Restoring old versions of files, exploring history
 - Remotes in Github, setting up collaborative work, handling or merging conflicts
 - Cloning a remote repository



Module learning outcomes

On completion of this module, the participants will have a basic knowledge of, or will be able to:

- Explain the benefits of an automated version control system.
- Explain the meaning of the --global configuration flag.
- Set up Git.
- Explain where information is stored at each stage of a cycle.
- Distinguish between descriptive and non-descriptive commit messages.
- Identify and use Git commit numbers.
- Compare various versions of tracked files.
- Collaborate by pushing to a common repository.
- Describe the basic collaborative workflow.
- Explain what conflicts are and when they can occur.
- Resolve conflicts resulting from a merge.



Module assessments

Module practical: Not applicable

Module quiz: Assessment questions available on the [ASLM platform](#)



Module resources

- [The Carpentry | GitHub - Automated Version Control](#)
- [The Carpentry | GitHub - Version Control with Git](#)
- [The Carpentry | GitHub - Conflicts](#)
- [The Carpentry | GitHub - Collaborating](#)
- [The Carpentry | GitHub - Exploring History](#)
- [The Carpentry | GitHub - Tracking Changes](#)
- [The Carpentry | GitHub - Creating a Repository](#)
- [The Carpentry | GitHub - Setting Up Git](#)
- [CBIO | UCT: Slides - Introduction to Git](#)



References

- ClaudeAI. (2024). ClaudeAI response on version control Multiple Choice Questions Retrieved Aug 06, 2024, from <https://claude.ai>.



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