Workshop Title/name: Introduction to Bioinformatics 2026

Course Overview/description:

African Bioinformatics Institute in collaboration with H3ABioNet aim to host the 11th iteration of Introduction to Bioinformatics (IBT). This introductory course, IBT, provides an introduction to the field of bioinformatics, with a focus on important bioinformatic tools and resources. Over a period of 3 months of intensive biweekly contact sessions, the course combines theoretical and practical sessions to allow participants to gain practical experience in using various tools and resources. During contact sessions, classrooms meet virtually to discuss the session's content with each other and the trainer.

Keywords: Genetics, Genomics, Nucleic acids analysis

Skill level of training: Beginner

Language: English

Credential awarded: Letter of completion

Type of training: Blended

Venue of workshop: Local classrooms (usually ~50 physical/online sites across Africa).

Dates for the workshop (duration if run as a MOOC): 07 July – 29 September 2026; Every Tuesday and Thursday from 10:30 CAT to 14:30 CAT.

Workshop organisers: African Bioinformatics Institute

Classroom applications

Registration for classrooms opens: 21 March 2026

Registration for classrooms closes: 10 April 2026

Link to classroom application form: **Classroom Host Application**

Notification date for successful classrooms: 20 April 2026

Maximum number of participants that may be accepted per classroom will be capped at 40

Participant applications

Registration for participants opens: 27 April 2026

Registration for participants closes: Monday 18 May 2026 at 11:59 pm CAT

Participant application form: To open in April 2026

Application instructions: Participants must select a classroom within their region and that they are able to attend physically should that classroom choose to go ahead as a face-to-face classroom. Please be sure to adhere to this as selecting a classroom outside of your region/location may result in your application being rejected. Please also be aware that applying for the course does not guarantee entry - you will undergo a formal selection process.

Course Sponsors: African Bioinformatics Institute + Local classrooms

Intended Audience: The course is aimed at individuals from a molecular biology background who have a basic understanding of biochemistry and/or genetics and would like to become bioinformatics users. For an explanation on who 'bioinformatics users' might be, see Figure 2 in http://journals.plos.org/ploscompbiol/article?id=10.1371/journal.pcbi.1003496. A baseline level of the understanding of the central dogma of biology (DNA -> RNA -> Protein) is a requirement.

Syllabus and Tools:

The course curriculum will cover the following main themes (subject to slight changes):

- **Bioinformatics resources and databases**
  - Introduction to bioinformatics, biological databases and resources (NCBI and EBI), data formats, ontologies
- **Linux**
  - Introduction to Linux, general overview of Linux environment, overview of command line interface, navigating Linux directory structure, manipulating files and directories, basic Linux commands
- **Sequence alignment theory and applications**
  - Introduction to searching and sequence alignment, BLAST, pairwise sequence alignment
- **Multiple sequence alignment (MSA)**
  - MSA theory, generating and interpreting MSAs using various tools, visualising and assessing MSA quality
- **Molecular evolution and phylogenetics**
  - Molecular evolution, phylogenetic approaches and methods (Introduction and overview of methods)
- **Genomics**
  - Overview of sequencing and annotation, Ensembl genome browser, Genetic variation, HapMap, 1000 genomes

***All modules make use of predominantly web-based tools such as NCBI, genome browsers, etc.*

Licensing for course materials: *The default licensing attached to any workshop and materials will be a creative commons license. Please do specify if a different license is required or whether materials will not be available publicly. If materials cannot be linked to our website, please specify a contact person in order to gain access to materials in future.*

Prerequisites: A basic background/understanding of biochemistry and/or genetics.

Learning objectives/outcomes: After this course, participants should be able to:

- Explain the use of bioinformatics
- Name the key bioinformatics techniques and tools
- Locate important biological databases and retrieve data
- Use selected tools effectively to run specific bioinformatics analyses
- Understand the strengths and limitations of the various techniques

Workshop limitations:

This course will only provide a foundation for continued learning in bioinformatics and will not teach any advanced coding.

For more information on IBT, please visit https://www.h3abionet.org/training/ibt