

BINF 5002 Computational Tools & Methods Critical Path

Week#	Class Type	Topics, Readings, and Activities
Week 1	LESSON	Course Administration Learning Outcomes Critical Path Operating Systems History of Linux Linux Distributions CoCalc Setup Basic Commands
	LAB	
Week 2	LESSON	List Command Command Flags and Arguments Man, --help, tl dr Absolute and Relative File Paths File System Hierarchy Tree Command Print Working Directory Change Directory Create, Copy, Move, Delete Files Create, Copy, Move, Delete Directories
	LAB	Lab 1 Due
Week 3	LESSON	Printing Text Environment Variables Output Redirection Read Files Cat Head Tail Nano VIM Regular Expressions Matching Characters Digits, and Ranges Capture Groups
	LAB	Lab 2 Due
Week 4	LESSON	Grep Piping Sed Awk Tar
	LAB	Quiz 1
Week 5	LESSON	Introduction to Shell Scripting Shells

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		Environment and Shell Variables .bash_profile and .bashrc User Input Conditional Statements (if, elif, else) For and While Loops Functions
	LAB	
Week 6	LESSON	Types of Users Primary and Supplementary Groups Numeric and Symbolic Permissions Chmod Umask Ps Foreground and Background Processes Kill Htop Package Management
	LAB	Lab 3 Due
Week 7	LESSON	Introduction to Biological Databases NCBI GenBank Curl Wget Entrez Direct FASTA file format
	PROJECT	Quiz 2
Reading Week		
Week 8	LESSON	Conda Virtual Environments Sequencing Machines SRA FastQ File format BioAwk Seqtk
	LAB	Lab 4 Due
Week 9	LESSON	Quality control FastQC Data Cleaning Fastp Cutadapt Trimmomatic MultiQC
	LAB	Quiz 3

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Week 10	LESSON	Sequence Alignment and Mapping BWA SAM Files BLAST
	LAB	
Week 11	LESSON	BAM File format SAMTools Post-Alignment Processing GATK Functional Annotations
	LAB	Lab 5 Due
Week 12	LESSON	VCF Files Functional Annotation SnpEff IGV Population Variation Frequency Databases GnomAD
	LAB	
Week 13	LESSON	Genomics Research Paper Presentation
	LAB	Quiz 4 Genomics Research Assignment

SUMMARY	WEIGHTAGE
Coding Assignments	45
Quizzes	20
Genomics Research Assignment	20
Genomics Research Paper Presentation	15
TOTAL	100

Note: This critical path may change as resources and circumstances require.