

Segment No.	Lecture Title	Duration	Category	Main Category
1	Introduction to NCBI	18:01	NCBI	Biological Databases
1	Sequence Retrieval	16:16	NCBI	Biological Databases
1	Sequence Analysis	17:59	NCBI	Biological Databases
1	PubMed Central & ENTREZ	11:06	NCBI	Biological Databases
1	FASTA vs GenBank	18:26	NCBI	Biological Databases
1	Gene	30:21:00	NCBI	Biological Databases
1	GenBank	6:50	NCBI	Biological Databases
1	Assembly & NCBI Genome	36:14:00	NCBI	Biological Databases
1	Genome Reference Consortium (GRC)	7:48	NCBI	Biological Databases
1	BioProject	6:39	NCBI	Biological Databases
1	BioSystems	4:16	NCBI	Biological Databases
1	BioSample	2:56	NCBI	Biological Databases
1	Sequence Read Archive (SRA)	7:14	NCBI	Biological Databases
1	Introduction to UCSC Genome Browser & SARS-CoV-2 Viral Genome	13:40	UCSC	Biological Databases
1	Retrieve an Entire Genome & Retrieval of SARS-CoV-2 Viral Genome	9:40	UCSC	Biological Databases
1	Table Browser & SARS-CoV-2 Viral Genome	12:15	UCSC	Biological Databases
1	Retrieval of Genomic Data & Annotation of SARS-CoV-2 Viral Genome	5:29	UCSC	Biological Databases
1	Visualization of Genomic Data on the Genome Browser & SARS-CoV-2 Genome	10:51	UCSC	Biological Databases
1	Introduction to ENSEMBL	7:49	ENSEMBL	Biological Databases
1	Retrieval of a Gene-Protein-Chromosomal Region	18:01	ENSEMBL	Biological Databases
1	Gene Analysis & Annotation	34:40:00	ENSEMBL	Biological Databases

1	Genome Assembly Retrieval and Analysis	10:23	ENSEMBL	Biological Databases
1	Comparative Genomics Analysis	5:34	ENSEMBL	Biological Databases
1	Database of Short Genetic Variations (dbSNP)	12:16	NCBI	Biological Databases
1	Database of Genomic Structural Variation (dbVar)	6:24	NCBI	Biological Databases
1	Variation	24:36:00	ENSEMBL	Biological Databases
1	NCBI BLAST Database Searching	25:36:00	NCBI	Biological Databases
1	BLAST/BLAT	15:08	ENSEMBL	Biological Databases
1	HomoloGene (Gene and Protein Families)	6:10	NCBI	Biological Databases
1	RefSeq Database	11:15	NCBI	Biological Databases
1	Taxonomy	9:56	NCBI	Biological Databases
1	Introduction to UniProt	9:56	UniProt	Protein Databases & Analysis
1	UniProtKB & Protein Analysis	39:29:00	UniProt	Protein Databases & Analysis
1	Introduction to Protein Data Bank (PDB)	6:44	PDB	Protein Databases & Analysis
1	Introduction to Molecular Modeling Database (MMDB)	8:06	NCBI	Protein Databases & Analysis
1	UniProteome & Retrieval of an Entire Proteome	13:05	UniProt	Protein Databases & Analysis
1	UniRef & Retrieve Protein Clusters	11:55	UniProt	Protein Databases & Analysis
1	UniParc & Find the Non-Redundant Entries	4:58	UniProt	Protein Databases & Analysis
1	Introduction to InterPro	4:10	InterPro	Protein Databases & Analysis
1	Protein & Protein Domain Analysis	9:29	InterPro	Protein Databases & Analysis
1	InterPro - Protein Family Classification and Analysis	14:35	InterPro	Protein Databases & Analysis
1	Peptide Search	3:15	UniProt	Protein Databases & Analysis

1	UniProt Align & Alignment of 2 Proteins	3:47	UniProt	Protein Databases & Analysis
1	Accurately Searching for a Protein Structure on PDB & Protein Analysis	13:55	PDB	Protein Databases & Analysis
1	Browsing PDB According to Annotation	6:52	PDB	Protein Databases & Analysis
1	Digging Out Categorized & Specific Protein Structures from PDB Archives	6:23	PDB	Protein Databases & Analysis
1	3D Structure Visualization on PDB	10:49	PDB	Protein Databases & Analysis
1	Biological Annotation and Protein Features View & Analysis	8:18	PDB	Protein Databases & Analysis
1	Genomic Discovery of Protein Structure Through Gene	4:07	PDB	Protein Databases & Analysis
1	Mapping Genomic Position to Protein Sequence and 3D Structure	4:34	PDB	Protein Databases & Analysis
1	Alignment Between Two PDB Sequences & Structures	6:07	PDB	Protein Databases & Analysis
1	Ligands	5:23	PDB	Protein Databases & Analysis
1	Protein Symmetry	2:34	PDB	Protein Databases & Analysis
1	Introduction to Phytozome	9:38	Phytozome	Biological Databases
1	Interpret Plant Genome Records	9:06	Phytozome	Biological Databases
1	Keyword or BLAST Search in a Plant Genome	15:58	Phytozome	Biological Databases
1	Visualize a Plant Genome using JBrowse	17:38	Phytozome	Biological Databases
1	Download an Entire Plant Genome & Proteome	26:41:00	Phytozome	Biological Databases
1	Gene Expression Omnibus (GEO) Database	9:15	NCBI	Biological Databases
1	Gene Expression Omnibus (GEO) Platforms	5:42	NCBI	Biological Databases

1	Gene Expression Omnibus (GEO) Samples	4:15	NCBI	Biological Databases
1	Gene Expression Omnibus (GEO) Datasets	4:44	NCBI	Biological Databases
1	Gene Expression Omnibus (GEO) Series	4:00	NCBI	Biological Databases
1	Regulation	4:18	ENSEMBL	Biological Databases
1	UniProt BLAST & Protein Database Searching	12:32	UniProt	Protein Databases & Analysis
1	ID Mapping & Making Analysis Easier	7:17	UniProt	Protein Databases & Analysis
1	PROSITE	13:46	Protein Families Database	Protein Databases & Analysis
1	Pfam	15:55	Protein Families Database	Protein Databases & Analysis
1	STRING	13:16	PPI Database	PPI Database
2	FASTA (Sequence Format)	6:13	Sequence File Format	Bioinformatics File Formats
2	GenBank (Sequence Annotation Format)	7:08	Sequence File Format	Bioinformatics File Formats
2	BAM	9:06	Sequence File Format	Bioinformatics File Formats
2	SAM	9:06	Sequence File Format	Bioinformatics File Formats
2	Gene File Format/Gene Transfer Format	11:06	Sequence File Format	Bioinformatics File Formats
2	BED (Gene Structure Format)	4:26	Sequence File Format	Bioinformatics File Formats
2	PHYLIP (Alignment Format)	4:34	Sequence File Format	Bioinformatics File Formats
2	MEGA (Alignment Format)	5:32	Sequence Alignment File Format	Bioinformatics File Formats
2	CLUSTAL (Alignment Format)	5:07	Sequence Alignment File Format	Bioinformatics File Formats
2	STOCKHOLM (Alignment Format)	3:10	Sequence Alignment File Format	Bioinformatics File Formats

2	SANGER/SOLEXA FASTQ (Sequence Quality Format)	18:01	Sequence Alignment File Format	Bioinformatics File Formats
3	Clustal Omega	19:18	Multiple Sequence Alignment	Sequence Alignment & Analysis
3	MUSCLE	21:07	Multiple Sequence Alignment	Sequence Alignment & Analysis
3	TCoffee	8:37	Multiple Sequence Alignment	Sequence Alignment & Analysis
3	Mafft	8:22	Multiple Sequence Alignment	Sequence Alignment & Analysis
3	Jalview	13:42	Multiple Sequence Alignment	Sequence Alignment & Analysis
3	NEEDLE	20:02	Pairwise Sequence Alignment	Sequence Alignment & Analysis
3	WATER	9:10	Pairwise Sequence Alignment	Sequence Alignment & Analysis
3	SignalP	7:57	Protein Analysis	Protein Databases & Analysis
3	TargetP	9:21	Protein Analysis	Protein Databases & Analysis
3	Aln2Plot	2:30	Protein Analysis	Protein Databases & Analysis
3	DeepCoil	3:22	Protein Analysis	Protein Databases & Analysis
3	HHrepID	5:15	Protein Analysis	Protein Databases & Analysis
3	MARCOIL	4:05	Protein Analysis	Protein Databases & Analysis
3	REPPER	2:25	Protein Analysis	Protein Databases & Analysis
3	HMMER	13:16	Motif & Domain Analysis	Protein Databases & Analysis
3	SMART: Finding Domains in Proteins	6:44	Motif & Domain Analysis	Protein Databases & Analysis
3	ScanProsite	7:36	Motif & Domain Analysis	Protein Databases & Analysis
3	MEGA	21:20	Phylogenetic Analysis & tools	Phylogenetic Analysis

3	FigTree	21:26	Phylogenetic Analysis & tools	Phylogenetic Analysis
3	iTOL	13:42	Phylogenetic Analysis & tools	Phylogenetic Analysis
4	Prodigal	25:46:00	Gene Prediction	Gene Prediction
4	GeneMark	16:51	Gene Prediction	Gene Prediction
4	GenScan	10:40	Gene Prediction	Gene Prediction
4	AUGUSTUS	17:27	Gene Prediction	Gene Prediction
4	Ali2D	4:09	Secondary Structure Prediction	Secondary Structure Prediction
4	Quick2D	4:33	Secondary Structure Prediction	Secondary Structure Prediction
4	Jpred	4:54	Secondary Structure Prediction	Secondary Structure Prediction
4	MODELLER	36:13:00	3D Structure Prediction	3D Structure Prediction
4	ROBETTA	14:39	3D Structure Prediction	3D Structure Prediction
4	M4T	9:26	3D Structure Prediction	3D Structure Prediction
4	SwissModel	12:52	3D Structure Prediction	3D Structure Prediction
4	PEPFOLD 3 peptide structure modeling	13:14	3D Structure Prediction	3D Structure Prediction
4	HHPRED	14:09	3D Structure Prediction	3D Structure Prediction
4	IntFOLD	8:41	3D Structure Prediction	3D Structure Prediction
4	Homology Modeling Using MOE	12:34	3D Structure Prediction	3D Structure Prediction
4	PROSA	10:05	3D Structure Evaluation	3D Structure Evaluation
4	SAVES	5:31	3D Structure Evaluation	3D Structure Evaluation
4	WhatCheck	8:40	3D Structure Evaluation	3D Structure Evaluation
4	ERRAT	6:44	3D Structure Evaluation	3D Structure Evaluation
4	Verify3D	8:31	3D Structure Evaluation	3D Structure Evaluation
4	RAMPAGE	3:29	3D Structure Evaluation	3D Structure Evaluation
4	ProCheck	12:36	3D Structure Evaluation	3D Structure Evaluation
4	Chimera	25:23:00	3D Structure Visualization	3D Structure Visualization
4	PyMol	40:48:00	3D Structure Visualization	3D Structure Visualization
4	Molecular Docking of Protein Ligand using MOE	9:23	Molecular Docking	Molecular Docking

4	Protein-Protein Docking Using MOE	11:38	Molecular Docking	Molecular Docking
4	Structure Based Drug Desinging Using MOE	16:19	Molecular Docking	Molecular Docking
4	Docking a Library of Compounds using MOE	19:48	Molecular Docking	Molecular Docking
4	SwissDock Protein Ligand Docking	19:16	Molecular Docking	Molecular Docking
4	ZDock Protein-Protein/ Ligand Docking	19:35	Molecular Docking	Molecular Docking
4	PatchDock Protein-Protein Docking	17:39	Molecular Docking	Molecular Docking
4	ClusPro Protein-Protein Docking	21:44	Molecular Docking	Molecular Docking
4	MDockPEP protein peptide docking	10:06	Molecular Docking	Molecular Docking
4	PDBepisa Docking Complex Evaluation	23:27	Docking Complex Evaluation	Docking Complex Evaluation
4	PDBsum Docking Complex Evaluation	18:49	Docking Complex Evaluation	Docking Complex Evaluation
4	SwissADME	15:31	Docking Complex Evaluation	Docking Complex Evaluation
5	Introduction to Python and Python Installation	8:25	Introduction	Python
5	Why Python in Bioinformatics & Code editor selection	9:16	Introduction	Python
5	Basic Input and output	15:37	Introduction	Python
5	Mathematical Operations	7:20	Introduction	Python
5	Comments	5:42	Introduction	Python
5	Strings	21:51	Iterable Objects	Python
5	Lists	28:47:00	Iterable Objects	Python
5	Tuples	10:37:00	Iterable Objects	Python
5	Dictionaries	10:57	Iterable Objects	Python
5	Sets	7:35	Iterable Objects	Python
5	If-Else	9:19	Control Flow	Python
5	For Loop and Calculation of Mol. Weight of Protein )	10:56	Control Flow	Python
5	While Loop and Code Generation	9:37	Control Flow	Python

5	Estimation of Net Charge and Protein	4:36	Biological Data Analysis	Python
5	Reading Normal and Bioinformatics Files (FASTA)	13:45	File Handling	Python
5	Writing Normal and Bioinformatics Files (FASTA)	7:17	File Handling	Python
5	CSV (A special kind of file in Bioinformatics)	8:41	File Handling	Python
5	File Handling OS Module	31:47:00	File Handling	Python
5	Consolidate (Merge) Multiple DNA or Protein Sequences into one FASTA file	9:24	File Handling	Python
5	Estimating Net Charge of several Proteins at once	7:13	Biological Data Analysis	Python
5	With: A secure way to open Files	8:50	Functions & Modules	Python
5	Functions	26:41:00	Functions & Modules	Python
5	Modules	16:50	Functions & Modules	Python
5	Error Handling	15:31	Error Handling	Python
5	Introduction to BioPython & Installation	10:18	Introduction	BioPython
5	Bio.Seq Create a Seq Object	7:38	Sequence Analysis	BioPython
5	Bio.Seq Seq Object Behaves Like a String	9:54	Sequence Analysis	BioPython
5	Bio.Seq Central Dogma in Play Through Python	8:41	Sequence Analysis	BioPython
5	Bio.Seq Unkown & Mutable Sequences	6:53	Sequence Analysis	BioPython
5	Bio.Alphabet Understanding the Alphabets of Biology	7:37	Sequence Analysis	BioPython
5	Bio.Alphabet IUPAC and Types of Sequence Representations	10:34	Sequence Analysis	BioPython
5	Bio.Alphabet Concatenation of Multiple Seq Records Using Generic Alphabets	9:47	Sequence Analysis	BioPython
5	SeqRecord Creating Seq Records	12:27	Sequence Analysis	BioPython

5	SeqRecords & FASTA	4:35	Sequence Analysis	BioPython
5	SeqRecords & GenBank	3:28	Sequence Analysis	BioPython
5	SeqRecord Formatting Records	3:47	Sequence Analysis	BioPython
5	SeqRecord Comparison & Reading Multiple FASTA Files from Directory	5:47	Sequence Analysis	BioPython
5	SeqIO Reading a Sequence File	10:32	Sequence Data Parsing	BioPython
5	SeqIO Parsing a Sequence File	7:16	Sequence Data Parsing	BioPython
5	SeqIO Extracting Annotations and Pattern-wise Sequence Data Extraction	10:35	Sequence Data Extraction	BioPython
5	SeqIO Parsing a Compressed Sequence File & Creating a Dictionary of Sequences	6:10	Sequence Data Parsing	BioPython
5	SeqIO - Write Sequences and SeqRecords Into Files	11:42	Sequence Data Parsing	BioPython
5	AlignIO - Reading and Parsing a Multiple Sequence Alignment File	8:19	Alignment Parsing and Analysis	BioPython
5	AlignIO - Writing Alignments and Multiple Sequence Alignment Records	5:28	Alignment Parsing and Analysis	BioPython
5	AlignIO - Information Mapping of Alignments	2:33	Alignment Parsing and Analysis	BioPython
5	AlignIO - Format Alignments	3:55	Alignment Parsing and Analysis	BioPython
5	AlignIO - Conversion of Alignment Formats	4:01	Alignment Parsing and Analysis	BioPython
5	AlignIO - Slicing Alignments	6:05	Alignment Parsing and Analysis	BioPython
5	AlignIO - Manipulating Alignments	2:57	Alignment Parsing and Analysis	BioPython
5	AlignIO - ClustalW Python Wrapper - Align Multiple Sequences	7:47	Alignment Parsing and Analysis	BioPython
5	AlignIO - Pairwise2 - Align Two Sequences	7:31	Alignment Parsing and Analysis	BioPython
5	Bio.Blast - Querying NCBI BLAST Through Python	11:41	BLAST Database Searching	BioPython

5	Bio.Blast - Parsing BLAST Results	14:51	Parsing BLAST results	BioPython
5	Bio.Entrez - Accessing ENTREZ Using Python	9:32	Biological Data Retrieval	BioPython
5	Bio.Entrez - Use ESearch to Search the Entrez Databases	8:20	Biological Data Retrieval	BioPython
5	Bio.Entrez - Use ESummary to Get Summary of Your Accessions	8:59	Biological Data Retrieval	BioPython
5	Bio.Entrez - Use EFetch to Download Complete Records	13:56	Biological Data Retrieval	BioPython
5	Bio.Entrez - Use ELink to Search for Database Links of Records	3:41	Biological Data Retrieval	BioPython
5	Bio.Entrez - Use EGQuery to Do Global Queries for Search Counts	7:24	Biological Data Retrieval	BioPython
5	Bio.Entrez - Use ESpell to Get Correct Spellings for Your Search Terms	5:21	Biological Data Retrieval	BioPython
5	Bio.Entrez - Download GenBank and Entrez Records	14:17	Biological Data Retrieval	BioPython
5	Bio.Phylo - Writing Out Phylogenetic Data	4:04	Phylogenetic Analysis	BioPython
5	Bio.Phylo - Calculating Distance Matrix Between Sequences for Phylogenetic Analysis	4:18	Phylogenetic Analysis	BioPython
5	Bio.Entrez - Taxonomy Database Searching	7:05	Biological Data Retrieval	BioPython
5	Bio.Entrez - Download PubMed Articles	8:28	Biological Data Retrieval	BioPython
5	Bio.PDB - Parsing Protein Structure Files	11:59	Parsing a PDB Structure file	BioPython
5	Bio.Phylo - Reading Phylogenetic Trees	6:28	Phylogenetic Analysis	BioPython
5	Bio.Phylo - Converting Phylogenetic Tree Data Formats	3:28	Phylogenetic Analysis	BioPython
5	Bio.Phylo - Printing Out Phylogenetic Tree in ASCII	2:17	Phylogenetic Analysis	BioPython

5	Bio.Phylo - Visualization and Manipulation of Phylogenetic Trees	9:36	Phylogenetic Analysis	BioPython
5	Introduction to R in Bioinformatics & R Installation	9:47	Introduction	R
5	The R Studio Interface Explanation	6:23	Introduction	R
5	Comments	4:16	Introduction	R
5	Variable Declaration & Objects	5:24	Variables & Functions	R
5	Built-in Functions and ARGS	4:31	Variables & Functions	R
5	Sample & Replacement	9:09	Variables & Functions	R
5	Write Your Own Functions & Arguments	5:39	Variables & Functions	R
5	Scripts	7:36	Variables & Functions	R
5	Packages	4:00	Packages	R
5	install packages	5:25	Packages	R
5	library & Initialize Packages	2:27	Packages	R
5	Getting Help with Help Pages	3:42	Packages	R
5	Atomic Vectors	2:42	Vectors & Data Types	R
5	Doubles	3:30	Vectors & Data Types	R
5	Integers	3:23	Vectors & Data Types	R
5	Characters	4:43	Vectors & Data Types	R
5	Logicals	2:27	Vectors & Data Types	R
5	Attributes & Names	4:46	Vectors & Data Types	R
5	Dim & Dimensions	5:46	Vectors & Data Types	R
5	Matrix & Matrices	4:42	Vectors & Data Types	R
5	Arrays	3:42	Vectors & Data Types	R
5	Class	3:12	Vectors & Data Types	R
5	Factors	6:40	Vectors & Data Types	R
5	Coercion	4:27	Vectors & Data Types	R
5	Lists	6:41	Vectors & Data Types	R
5	Data Frames	6:30	Biological Data Analysis	R

5	Loading Biological Data	7:55	Biological Data Analysis	R
5	Saving Biological Data	5:26	Biological Data Analysis	R
5	R Notiation & Selecting Values from Biological Dataset	4:09	Biological Data Analysis	R
5	Positive Integers for Subsetting Biological Dataset (DataFrame)	5:25	Biological Data Analysis	R
5	Negative Integers for Subsetting Biological Dataset (DataFrame)	5:28	Biological Data Analysis	R
5	Zero Notation for Subsetting Biological Dataset (DataFrame)	1:09	Biological Data Analysis	R
5	Blank Spaces for Biological Data Subsetting	3:20	Biological Data Analysis	R
5	Dollar Signs for Biological Data Subsetting	2:58	Biological Data Analysis	R
5	Modifying Values in Existing DataFrames/Datasets	7:06	Biological Data Analysis	R
5	NA Values in Biological Datasets	5:24	Biological Data Analysis	R
5	Figuring Out NA Values in Biological Datasets	2:06	Biological Data Analysis	R
5	Logical Subsetting in Biological Datasets	9:45	Biological Data Analysis	R
5	if else Statements	4:15	Control Flow	R
5	for Loops & Biological Data Binding	16:30	Control Flow	R
5	while Loops & Reading Multiple Biological Datasets	16:16	Control Flow	R
5	Introduction to ggplot2 for Biological Datasets	10:46	Data Visualization: ggplot2	R
5	ggplot2: Key components	8:25	Data Visualization: ggplot2	R
5	ggplot2: Human Mitochondrial Proteome & Aesthetics (Size, Shape, Color)	26:02:00	Data Visualization: ggplot2	R
5	ggplot2: Facetting of Human Genome	22:25	Data Visualization: ggplot2	R
5	ggplot2: Smooth Out the Biological Data	8:43	Data Visualization: ggplot2	R

5	ggplot2: Frequency Plots for Human Mitochondrial Information Frequency Mining	6:12	Data Visualization: ggplot2	R
5	ggplot2: Bar Charts Human Mitochondrial Knowledge Mining	10:43	Data Visualization: ggplot2	R
5	ggplot2: Boxplots for Human Mitochondrial Proteome	7:55	Data Visualization: ggplot2	R
5	ggplot2 :Histograms for Human Mitochondrial Pattern Finding	6:02	Data Visualization: ggplot2	R
5	ggplot2: Labels	8:41	Data Visualization: ggplot2	R
5	ggplot2: Plot Phylogenetic Trees through ggtree	5:41	Data Visualization: ggplot2	R
5	Introduction to Linux for Bioinformatics	22:31	Introduction	Linux
5	cd	5:03	Managing Files and Directories	Linux
5	cp	3:43	Managing Files and Directories	Linux
5	ls	6:45	Managing Files and Directories	Linux
5	mkdir	8:12	Managing Files and Directories	Linux
5	mv	5:10	Managing Files and Directories	Linux
5	rm	1:23	Managing Files and Directories	Linux
5	pwd	1:26	Managing Files and Directories	Linux
5	touch	7:03	Managing Files and Directories	Linux
5	find	3:38	Finding Files	Linux
5	stat	2:43	Finding Files	Linux
5	which	3:43	Finding Files	Linux
5	cat	3:55	Processing Files	Linux
5	cut	5:48	Processing Files	Linux
5	diff	2:34	Processing Files	Linux
5	grep	8:55	Processing Files	Linux
5	sort	4:22	Processing Files	Linux
5	uniq	10:32	Processing Files	Linux
5	wc	2:45	Processing Files	Linux
5	gunzip	2:14	Archiving & Compressing Files	Linux

5	gzip	6:05	Archiving & Compressing Files	Linux
5	tar	4:18	Archiving & Compressing Files	Linux
5	wget	6:48	Displaying Dates & Time	Linux
5	Column	4:38	Processing Files	Linux
5	head	3:49	Processing Files	Linux
5	tail	2:22	Processing Files	Linux
5	(Piping)	6:34	Piping & Redirection	Linux
5	vim	5:58	Text Editor	Linux
5	curl	2:25	Displaying Dates & Time	Linux