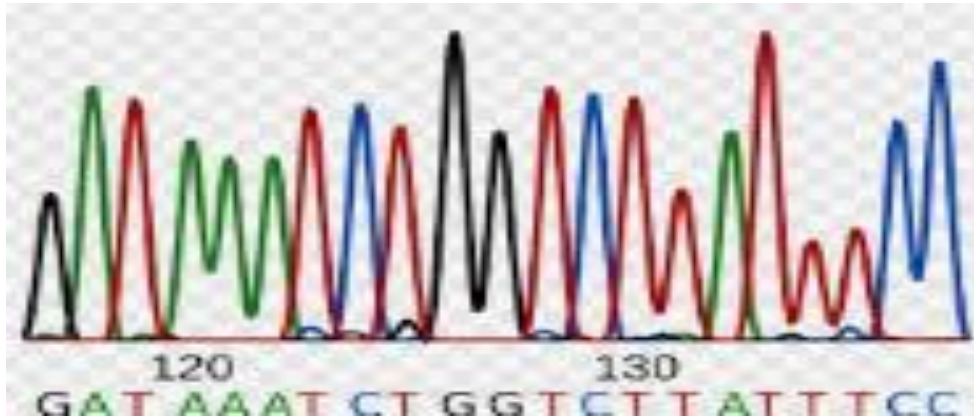




# SANT BABA BHAG SINGH UNIVERSITY, JALANDHAR

**Value ADDED Course**

**DNA Sequences: Alignments and Analysis**



**Department of Botany (UIH)**

DURATION: 30Hours

**COORDINATOR**

Dr Anil Kumar Singh

Assistant Professor (Botany)

Department of Agriculture and Botany

University Institute of Sciences & Humanities

Sant Baba Bhag Singh University, Jalandhar

## REGISTRATION FORM

### Value Added Course on “DNA Sequences: Alignments and Analysis”

Name\_\_\_\_\_

Father Name\_\_\_\_\_

Mother Name\_\_\_\_\_

Date of birth\_\_\_\_\_ Department\_\_\_\_\_

Class/Semester\_\_\_\_\_

Address for correspondence\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Contact No. \_\_\_\_\_

Email \_\_\_\_\_

Signature of Applicant

Date\_\_\_\_\_

#### VENUE

Block No.5, Room No. 513, Sant Baba Bhag Singh University, Jalandhar, Punjab, India.

#### For more Information Contact

Dr Anil Kumar Singh

Assistant Professor

Department of Agriculture and Botany

University institute of Sciences & Humanities

Sant Baba Bhag Singh University,

Jalandhar-144030

**Title of Value Added Course:** DNA Sequences: Alignments and Analysis

Value added courses are the types of courses which help a particular individual to develop their skills in their chosen field of the study. The Value Added Courses aim to provide additional learner centric graded skill oriented technical training, with the primary objective of improving the employability skills of students. It is important for all institutions to supplement the curriculum to make students better prepared to meet industry demands as well as develop their own interests and aptitudes.

<b>Course Name</b>	<b>Course Code</b>	<b>Duration</b>	<b>Batch Timings</b>	<b>Tentative Batch Start Date</b>	<b>Course Coordinator</b>
DNA Sequences: Alignments and Analysis	BOT011	30 hrs	12:30 – 1:20pm 3:30 – 4:20pm (tentative to be adjusted as per time table)	October 2020	Dr. Anil Kumar Singh

**Eligibility:**

*Final year graduate students and Master students*

**Prerequisites**

Basic knowledge in life sciences

**Course Fee:**

Applicable /Not Applicable

**Course Duration information:**

30 hrs.

**Course Syllabus**

**Week 1:**

**Biological Data Acquisition:** The form of biological information. Retrieval methods for DNA sequence. Databases– Format and Annotation: Conventions for database indexing and specification of search terms, Common sequence file formats, Annotated sequence databases - primary sequence databases, Organism specific databases.

**Data – Access, Retrieval and Submission:** Standard search engines; Data retrieval tools, Submission of (new and revised) data; Sequence Similarity Searches: Local versus global.

**Week 2:**

**Distance metrics:** Similarity and homology Scoring matrices. Dynamic programming algorithms, Needleman-wunsch and Smith-waterman, Heuristic Methods of sequence alignment, FASTA, BLAST and PSI BLAST, Multiple Sequence Alignment and software tools for pairwise and multiple sequence alignment.

**Genome Analysis:** Whole genome analysis, existing software tools; Genome Annotation (link is external) and Gene Prediction; ORF finding.

**Phylogenetic Analysis:** Comparative genomics, orthologs, paralogs. Methods of phylogenetic analysis: UPGMA, WPGMA, neighbour joining method, Fitch/Margoliash method, Character Based Methods.

**Course Outcome:**

A student completing DNA Sequences: Alignments and Analysis shall be able to apply knowledge to understand features, function, structure, or evolution of genome.