

Summer Internship Program On "Molecular and Microbiological Techniques"

1st June – 14th July 2019



Organized by:

Department of Microbiology

**Uttarakhand (PG) College of
Biomedical Sciences and Hospital
Near ISBT, Sewala khurd, GMS
Road, Transport Nagar, Dehradun
Uttarakhand - 248001**

About the UCBMSH

Uttarakhand (P.G) College of Biomedical Sciences & Hospital has come into existence as a result of concerted efforts of "Guru Nanak Dev Educational Society" registered under the Indian Society Act of 1860, recognized by ministry of HRD, Govt. of India is a dream comes true of its founder Er. Gurudev Singh Warne. This educational society which is imparting quality education so as to build up competent professional with moral ethical values imbibed in them, so that such professionals can not only meet the societal needs of our nation but also manage effectively the affairs of the world, now turned into a global village in this millennium. The college is affiliated to **HNB Garhwal (Central) University, Srinagar, Garhwal (Uttarakhand)**. It is also approved by the **Ministry of Health & Family Welfare, Govt. of Uttarakhand** and **Indian Association of Physiotherapists** for paramedical courses. The college offers more than 20 courses at graduate and post graduate level in the areas of Life sciences, Agro sciences, Paramedical, Physiotherapy, and Nursing with adequate infrastructural support and well equipped laboratories and modern demonstration facilities.

About the Internship program

The program is intended for the graduate and post graduate students for providing exposure to the basic techniques used in Microbiology, Molecular Biology, Fermentation Technology and Research problems through bench work.

Eligibility

❖ **Undergraduate/Post Graduate students** (Microbiology, Biotechnology, Botany, Zoology, Environmental Sciences)

NOTE: Students of host institution are not eligible to apply for the program.

Registration

Those willing to attend the program are requested to submit the duly filled registration form to **Dr. Neha Kapoor, Program Co-ordinator** via mail on hodmicro@ucbms.org by 20th May 2019. Seats will be tentatively reserved for those who will send requests.

After the completion of this internship program, certificate will be provided to all the students.

Contents of the Program

***Module 1: Basic Laboratory techniques
(1st June- 5th June 2019)***

- *Demonstration of Instruments*
- *Basic Calculation techniques (Calculation of moles, molarity, molality and normality for preparation of given solution)*
- *Introduction to Sterilization techniques*
- *Preparation of Buffers and Solutions*
- *Calibration of pH meter and determination*

Module 2: Basic Microbiological Techniques

(6th June- 13th June 2019)

- Preparation of LB media plates and inoculation
- Isolation and enumeration of bacteria and fungi from soil sample by dilution method
- Pure culturing of Bacteria and Fungi
- Preservation of microbial cultures by Glycerol-stock method
- Preparation of paper culture, grain culture
- Identification of Bacteria and fungi by staining methods (Gram staining, Lactophenol cotton blue staining)
- Culture Filtrate production

Module 3: Food and Industrial Microbiology

(14th June- 21st June 2019)

- Adulteration testing in milk
- To determine the isoionic point of protein in given milk sample
- Production of Wine from juice
- Estimation of alcohol concentration in wine.
- Production and estimation of acidity (% of acetic acid) of Vinegar
- Screening of amylase, Cellulase, protease producing micro-organisms
- Estimation of enzyme production by microbial cultures via liquid state and Solid state fermentation.
- Partial Purification of enzyme by ammonium sulphate precipitation method

- Separation and determination of molecular weight of proteins by SDS-PAGE.
- To determine the antibacterial activity of given antibiotic using Kirby Disc/agar Well diffusion assay
- Determination of Minimum Inhibitory concentration (MIC) of given antibiotic

Module 4: Recombinant DNA Technology

(22nd June- 4th July 2019)

- Isolation of genomic DNA from Bacteria
- Isolation of Plasmid DNA
- Qualitative analysis of DNA by Agarose Gel electrophoresis
- Quantitative analysis of DNA by Spectrophotometric method
- Preparation of competent cell
- To perform Restriction Digestion of DNA
- PCR amplification of the gene
- Molecular Identification and Phylogenetics of Microbes

Module 5: Ethanopharmacology

(5th July- 14th July 2019)

- Preparation of plant extracts by cold percolation method
- Phytochemical analysis of given plant/microbial crude extract
- Separation of plant pigments by Paper/Thin Layer chromatography
- Biological and enzymatic assays of crude extracts.

REGISTRATION FORM

Summer Internship Program-2019 "Molecular and Microbiological Techniques"

Applicant Name.....

Please tick the appropriate box

Undergraduate Post Graduate

Year/Discipline.....

College/University Name.....

Gender.....

Address.....

Mobile.....

Email id.....

Source of information of this program:

Internet

College website

Friend

Newspaper

Other, please specify.....

Expectation from internship program:.....

Place:

Date:

Signature of the Applicant