

PMRF-ISSS Teaching Programme

Prime Minister Research Fellowship students' teaching requirement
facilitated by the Institute of Smart Structures and Systems



Module PMRF-ISSS055/2023

The Microbial Odyssey: Understanding the fundamentals of Microbiology

Name of the PMRF student

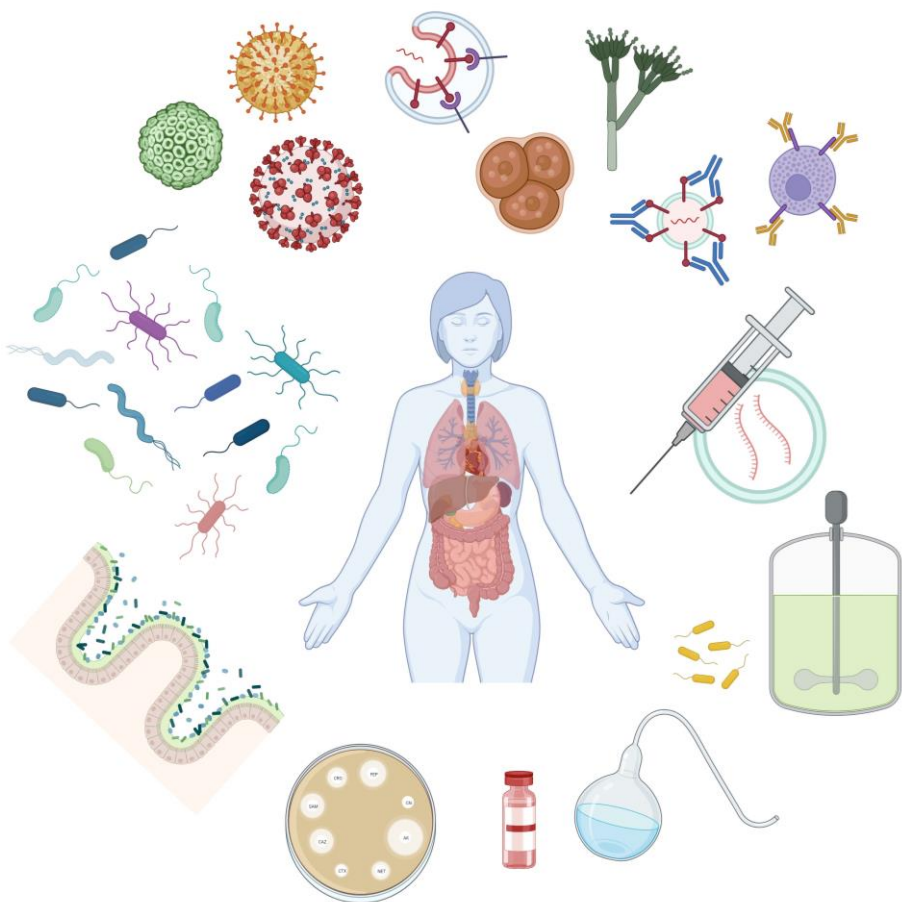
ADITI KANOJIA

Required background of the students taught

A basic understanding of Cell Biology and Biochemistry is appreciated.

Online Session Coordinator

Will be chosen from the list of registrants



Details of the content of the module

In this course, we will dissect the intricacies of microbiology as a field, covering the following topics:

- **History Of Microbiology:** Discovery of microorganisms **(Lectures: 1)**
- **Bacteriology:** Bacterial structure, classification, genetics, physiology, and ecology. **(Lectures: 2)**
- **Virology:** viral structure, replication, pathogenesis, and the development of antiviral treatments and vaccines. **(Lectures: 3)**
- **Mycology:** fungal biology and their roles in diseases, food production, and biotechnology. **(Lectures: 1)**
- **Immunology:** Immune responses to various pathogens, the development of vaccines, and immunotherapies. **(Lectures: 3)**
- **Cancer Microbiology:** Tumor Microbiome Composition, Microbial Dysbiosis, Immune Response, Oncogenic Viruses **(Lectures: 1)**
- **Microbial Genetics:** mechanisms of DNA replication, mutation, and gene expression in different pathogens, Antibiotic resistance, and genetic engineering to modify microorganisms for various applications. **(Lectures: 3)**
- **Industrial Microbiology:** fermentation, bioremediation, and the production of various products, including antibiotics and enzymes. **(Lectures: 1)**
- **Aquatic and astrobiology:** Microorganisms in aquatic environments, including oceans, lakes, rivers, and groundwater, the possibility of microbial life in extraterrestrial environments. **(Lectures: 1)**

Will also host two supplementary classes where we will review and discuss cutting-edge research papers related to the course material.

Schedule of the module

Start Date: 12th October 2023

End Date: 8th December 2023

Total number of sessions: 18 (Including the Discussion sessions)

Duration: 1 Hour

Classes will be held on **Thursdays and Fridays**, from **7 to 8 pm**.

Meeting link : Will be shared later

Contact email

ID: iss.forum@gmail.com

Registration link:

<https://docs.google.com/forms/d/1-hnGNCrli55KmMa66NNhYeDeHpspaqE2dnWPP1g3PCs/edit>