

**DEPARTMENT OF BIOTECHNOLOGY
SCHOOL OF CHEMICAL AND LIFE SCIENCES
JAMIA HAMDARD, NEW DELHI**

F.No. JH/SCLS/BTN/BS29/2021

09/07/21

**MINUTES OF THE 29th MEETING OF THE BOARD OF STUDIES
HELD ON 9th JULY, 2021 AT 03:00 PM THROUGH ONLINE.**

The 29th meeting of the Board of Studies, Department of Biotechnology, SCLS was held on Friday, the 9th July, 2021 at 03:00 P.M. through Online (Google Meet platform). under the Chairmanship of Professor Pradip K. Chakraborti, Head, Dept. of Biotechnology, School of Chemical and Life Sciences, Jamia Hamdard. Following were present:

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|-------------------------------------|-------------------|
| 1) Professor T.P. Singh | : Co-opted Member |
| 2) Professor K. Natarajan | : Co-opted Member |
| 3) Professor M.Z. Abdin | : Member |
| 4) Dr. Alka Narula | : Special Invitee |
| 5) Dr. Saima Wajid | : Member |
| 6) Dr. Humaira Farooqi | : Special Invitee |
| 7) Dr. Mairaj A. Ansari | : Special Invitee |
| 8) Dr. Javaid A. Sheikh | : Member |
| 9) Dr. Jagriti Narang | : Special Invitee |
| 10) Professor Pradip K. Chakraborti | : Chairman |

At the outset Professor Pradip K. Chakraborti Chairman of Board of Studies welcomed the members including Professor T.P. Singh and Professor K. Natarajan for sparing their valuable time to attend and participate in deliberations of the BoS meeting even during the current prevailing Covid-19 pandemic. Both the experts expressed their happiness to be the part of the Committee. Thereafter, the following agenda items were taken up for discussion and deliberated upon.

29BS-2 : Confirmation of the Minutes of the 28th Meeting of BoS:

The minutes of the 28th meeting of the Board of Studies (BoS) held on April 27, 2021 were circulated among the members/special invitees. No comments were received. Therefore, the minutes stand accepted (**Annexure I**).

29BS-3 : Date-Sheet of conducting end semester examination.

The Chairman apprized the Committee about the Date-Sheet of upcoming end semester (M.Sc. Biotechnology Semester II) examination scheduled to be held from August 9-20, 2021 (**Annexures II**). He also elaborated that examination will be through online mode under the supervision of Department level exam committee. He also intimated that the date sheet has already been approved by the Dean, School of Chemical and Life Sciences.

29BS-4.1 : Approval of Panel for External & Internal Examiners for the M.Sc. 2nd Semester Examination 2021.

The Chairman, presented the panel of examiners for the students appearing in M.Sc (Biotechnology) Semester II for kind perusal/inputs and recommendation of the

29th meeting of the Board of Studies (09/07/21)

Alka Narula *K. Natarajan*

(Signature)

Jagriti Narang

(Signature)

Saima Wajid

Alka Narula

(Signature)

members/invitees of the BoS. After deliberation, the committee made necessary minor corrections and recommended the panel (**Annexures III**). The Committee further empowered the Head, Dept of Biotechnology/Dean, SCLS to nominate the external examiner(s) from the panel.

29BS-4.2 : Approval of M.Sc-level courses: Fundamentals of Biotechnology and Medical Microbiology

In the 28th meeting of the Board of Studies, introduction of Department level Foundation course was discussed instead of existing 8 credit School level Foundation course. The Chairman proposed the alternative discipline centric 8 credit course in place of School level Foundation course. Accordingly, 4 credit 'Fundamentals of Biotechnology' course was discussed. For the remaining 4 credit, Medical Microbiology course will be offered. The detailed syllabus as provided in **Annexure IV** was presented for approval. The BoS members suggested to include introductory Biostatistics in 'Fundamentals of Biotechnology', which is incorporated.

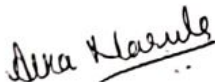
29BS-4.3 : Renaming of B.Sc-M.Sc (Biotechnology) Integrated Programme as B.Sc-M.Sc Dual degree Programme

The Chairman intimated the Committee that naming of our ongoing B.Sc.-M.Sc. (Biotechnology) Integrated Programme is causing problems since it has an exit option after Semester VI with Bachelor's degree and also promotion to next Semester for obtaining admission to the Master's Program. To avoid such complications, it is proposed that the name of B.Sc-M.Sc (Biotechnology) Integrated Programme be changed as B.Sc-M.Sc Dual degree Programme. After deliberation, the members agreed over the proposal and the Committee recommended the change in name to B.Sc.-M.Sc. Dual degree Programme.

The meeting ended with a vote of thanks to the Chair.

Approval received by
Email

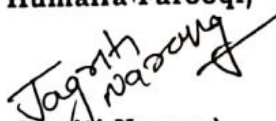

(Prof. T.P. Singh)

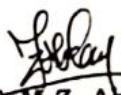

(Dr. Alka Narula)

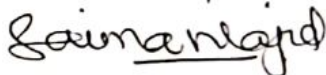

(Dr. Javaid A. Sheikh)


(Prof. K. Natarajan)



(Dr. Humaira Farooqi)


(Dr. Jagriti Narang)


(Prof. M.Z. Abdin)


(Dr. Saima Wajid)


(Dr. Mairaj A. Ansari)


Prof Pradip K. Chakraborti
Chairman & Head, Dept. of Biotechnology

29th meeting of the Board of Studies (09/07/21)



DEPARTMENT OF BIOTECHNOLOGY

FUNDAMENTALS OF BIOTECHNOLOGY

Course Code: MBTCC-100

Credits: 4

Category: Core Course

Marks: 25 (IA) + 75 (SE) = 100

UNIT I: Overview

Introduction and Definition. Historical Perspectives. Scope and Importance of Biotechnology. Commercial Potential. Medical and social implications of Biotechnology. Transgenic animals and plants. Role of Biotechnology in immunotherapeutics and diagnostics. Implications of Biostatistics, Bioinformatics and Structural Biology in Biotechnology.

Unit II: Tools and Techniques in Biotechnology

Fundamentals of Techniques: Concept of pH and Buffers. Principles of Thermodynamics and Free Energy. Exergonic and Endergonic reactions. Molarity and Normality, Dimensions and Units, Measurement Conventions.

Cellular Techniques: Microscopy. Cell Sorting. Cell Fractionation. Cell-Growth Determination.

Genetic Techniques: Recombinant DNA technology. Recombination in Bacteria. Breeding Methods in Plants. Somatic Hybridisation. Pedigree Analysis in Humans.

Unit III: Applications of Biotechnology

Genetic engineering of plants and animals: Development of GMOs - pros and cons and future.

Environmental Biotechnology: Biological Fuel Generation. Sewage Treatment.

Medical Biotechnology: Gene therapy. monoclonal antibodies and recombinant enzymes.

Agriculture and Forest Biotechnology: Gene pool conservation. Biofortification.

Food and Beverage Biotechnology: Single-cell Proteins. Nutraceuticals. Food preservation

Unit IV: Biotechnology and Society

Public perception of Biotechnology. Patenting (Intellectual Property Rights—IPR) Varietal Protection. Ethical Issues in Biotechnology—Agriculture and Health Care Quality Control in Manufacturing. Product Safety. Good Manufacturing Practice (GMP). Good Laboratory Practices (GLP). Marketing. Safety in Biotechnology.



DEPARTMENT OF BIOTECHNOLOGY

MEDICAL MICROBIOLOGY

Course Code: MBTCC-103

Credits: 4

Category: Core Course

Marks: 25 (IA) + 75 (SE) = 100

UNIT - I Bacterial diseases

Normal microflora (microbiome) of human body and its role - Skin, mouth and respiratory tract, intestinal tract, urogenital tract; Pathogenesis and virulence factors - Koch's postulates, Adherence and invasion, Toxins, Enzymes, Antiphagocytic factors, Antigenic heterogeneity, Iron acquisition (*Bacillus anthracis*, *Clostridium sp.*, *Corynebacterium diphtheriae*; *E. coli*, *Vibrio cholerae*, *Helicobacter pylori*, *Salmonella typhi* and *paratyphi*, *Shigella dysenteriae*; *Listeria monocytogenes*, *Mycobacterium sp.*). Rickettsial diseases; *Haemophilus influenzae*, *Bordetella pertussis*, Brucellosis, Streptococcal and Staphylococcal infections; Antibacterial chemotherapy (with examples of antibiotics); Inhibition of cell wall synthesis, inhibition of cell membrane function, inhibition of protein and nucleic acid synthesis, antimetabolites, antimicrobial activity in vitro and in vivo, Drug resistance - origin (genetic and non-genetic), mechanisms, Multi-drug resistance and its mechanisms e.g. MDR-TB.

UNIT - II Viral diseases

Viral Pathogenesis - Routes of entry, Viral spread (local and systemic infection), Viral persistence (chronic and latent infection); Polio, Chicken pox, Mumps, Measles, Rubella; Viral hemorrhagic fever, viral encephalitis, Dengue and Yellow fever; Influenza virus infection (emphasis on Avian and swine flu), Rabies and Prion diseases; Hepatitis and Human Cancer viruses; Emerging viral diseases - Ebola, Marburg, SARS, Hanta, Chikungunya, Zika, Chandipura; Antiviral chemotherapy and Viral vaccines; Nucleotide and nucleoside analogs, Reverse transcriptase inhibitor, protease inhibitor, fusion inhibitor etc., Interferons, Killed and attenuated vaccines.

UNIT - III Fungal and protozoan infections

Types of Mycoses (with specific example of causative fungi) - Superficial, Cutaneous, Subcutaneous; Types of Mycoses (with specific example of causative fungi) - Endemic and Opportunistic; Mycotoxins and Antifungal chemotherapy - Mycetismus, Aflatoxins, classes of currently available drugs and new inhibitors in the pipeline; Protozoan diseases - Giardiasis, Amoebiasis; Leishmaniasis, African sleeping sickness; Malaria, Cryptosporidiosis; Infection by Helminths - Nematodes, Trematodes, Cestodes.

UNIT - IV Host-pathogen interaction

Intracellular and extracellular pathogens, Principles of microbial pathogenesis, host damage, inflammatory responses, adaptation strategies of pathogen- impact of host and pathogen metabolism on immunity and pathogen survival; Chronic pathogens and mechanisms of persistence; Evasion mechanisms of pathogens; Bacterial - host interaction- *Mycobacterium tuberculosis*, *Borrelia burgdorferi*; Viruses - host interaction: HIV, Influenza; Protozoan - host interaction: *Plasmodium sp.*, *Leishmania sp.*

Annexure IV

MBTCC-100	Fundamentals in Biotechnology	Core	25	75	100	4
MBTCC-101	Molecular Biology	Core	25	75	100	4
MBTCC-102	Essential of Genetic Engineering	Core	25	75	100	4
MBTCC-103	Medical Microbiology	Core	25	75	100	4
MBTOE-104	Cellular Biology and Biomolecules	OE	25	75	100	4
MBTCC-105	Biomolecules, Genetic Engineering and Molecular Biology - Practical	Core	50	150	200	8
Total			175	525	700	28