Dr. N.G.P. ARTS AND SCIENCE COLLEGE

(An Autonomous Institution, Affiliated to Bharathiar University, Coimbatore)
Approved by Government of Tamil Nadu & Accredited by NAAC with 'A++' Grade (3rd Cycle-3.64 CGPA)
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Board of Studies Meeting

Department of Microbiology

The minutes of the 16th meeting of Board of Studies held on 18.10.2023 at 10.00 am at the Microbiology Department, Instrumentation Room (B1-1302).

Members Present:

S. No.	Name	Category
1	Dr. J. Rengaramanujam	Chairman
2	Dr. K. Vijila	Subject Expert
3	Dr. S. Murugan	Subject Expert
4	Dr. Chitra Tangavel	Industrial Expert
5	Dr. N. Kuppuchamy	Co – Opted Member
6	Dr. R. Vithya Prabha	
7	Dr. P. Chidambara Rajan	Allied Subject
8	Dr. D. Geetharamani	Member
9	Dr. S. S. Sudha	Member
10	Dr. N. Vidhya	Member
11	Dr. S. Senthil Prabhu	Member
12	Dr. A. M. Ramachandran	Member
13	Dr. C. Sasikala	Member
14	Dr. S. Karthik Sundaram	Member
15	Dr. R. Mahenthiran	Member
16	Prof. M. Nivethitha	Member
17	Dr. J. Devakumar	Member
18	Nandhini. V. D (PG)	Student Representatives
19	Thirisha. Y (UG)	

The HoD and Chairman of the Department of Microbiology welcomed and introduced all the members and appreciated them for their continuous support, contribution for the development of academic standard and enrichment of the syllabus.

Further Chairman informed the inability of the following member/s to attend the meeting and requested to grant leave of absence.

1. Dr. M. Gnanadesigan - University Nominee
2. Ms. Durgadevi . S - Meritorious Alumni

The items of the agenda were taken one by one for discussion and the following resolutions were passed.

Item 16.1

To review and approve the minutes of the previous meeting held on **16. 10.2023**

The chairman of the Board presented the minutes of the previous meeting held on **16.10.2023** and requested the members to approve. After brief discussion the following resolution was passed

Resolution:

Resolved to approve the minutes of the previous meeting held on 16.10.2023

Item 16.1(a): To consider and approve the syllabi for II semester for the students admitted during the academic year 2023-2024.

The chairman presented the detailed scheme and syllabus for the II semester for the students admitted from the academic year 2023-2024 onwards. The details of changes made also presented as follows.

Changes Made:

Course	Code	Reason
Core Practical II	233MB1A2CP	Dr. D. Geetharamani recommended to include Chromatography, Estimation of Biomolecules, Extraction techniques relevant to Microbial physiology and Bioinstrumentation for enhancing the employability in clinical diagnosis and quality assurance

New Courses Introduced:

Course	Code	Reason
Bioinstrumentation	233MB1A2CB	Dr. Vijila suggested to include handling of instrumentation as part of every unit to have experiential learning

Courses Removed

Course	Code	Reason
Microbial Genetics	233MB1A2CB	Dr. Chitra Tangavel emphasized on relocating the course to third semester since it will be more advanced for the beginners.

After discussion, the following resolution was passed with the above changes and modifications.

Resolution:

Resolved to approve the syllabus for the II semester for the students admitted from the academic year 2023-24 onwards,

Item 16.1(b) : To consider and approve the changes, if any, in the syllabi for IV semester for the Students admitted during the academic year 2022-2023.

The Chairman presented the detailed syllabus for the IV semester for the students admitted from the academic year 2022-2023 onwards. The details of changes made also presented as follows.

Changes Made:

B. Sc Microbiology		
Course	**Code**	**Reason**
Immunology	223MB1A4CA	Dr. Murugan recommended for introducing the topics such as Apoptosis, Immuno-electrophoresis, Monoclonal antibody production and its applications and Immuno-deficiency diseases since these topics are the basis of immunodiagnosis and applications.
Recombinant DNA Technology	223MB1A4SA	Dr. Chitra Tangavel suggested to include the topics like gene manipulating enzymes, Eukaryotic vectors, screening and selection of recombinants, chromosome walking and jumping to be updated with current trends in genetic engineering.
M. Sc Microbiology		
Fermentation Technology	223MB2A4CA	Considering the heaviness in learning the technicality, Dr. Vijila recommended to remove the construction of Fomenters and its design
Bioethics, Biosafety and IPR	223MB1A2CA	Dr. Murugan suggested to reframe the Unit-V, for being more focused on research dimensions and have better strategic learning on current issues

New Courses Introduced:

B. Sc Microbiology		
Course	**Code**	**Reason**
Food Microbiology (Embedded Course)	223MB1A4CP	Dr. Vijila suggested introducing the Embedded Course with practicals for improving the job opportunities in the field of food quality control.
Core Practical - Immunology and Recombinant DNA Technology	223MB1A4CQ	Dr. Murugan suggested including practical's such as transformation, carcinogenicity testing, and ESR count to upkeep with interdisciplinary job space.
M. Sc Microbiology		
Molecular Diagnostics and Bioinformatics	223MB2A4DA	Dr. Chitra Tangavel recommended to add the following new topics such as pyrosequencing, metagenomics, Nucleic acid probe preparation, DDBJ, Gene bank and Multiple sequence alignment to be parallel with new molecular techniques and have better research appttitude

IDC offered

Course	**Code**	**Reason**
Basic Microbiology	223MB1A4IA	Dr. Chitra Tangavel recommended inclusion of topics like basic microbiological techniques such as history, microscopic techniques, sterilization and culturing techniques to CLT students for having better understanding of microbiology.
IDC Practical: Microbiology	223MB1A4IP	Dr. Vijila suggested to add basic instrumentation, staining techniques, culturing and isolation methods to equip the students for clinical diagnosis.

Courses Removed

Course	**Code**	**Reason**
Nil		

After discussion the following resolution was passed with the above changes and modifications.

Resolution:

Resolved to approve the syllabus for the IV semester for the students admitted from the academic year 2022-23 onwards.

Item 16.2: To consider and approve value added courses brought forward by the Chairman and the members of the board.

The following Value Added Certificate Course are to be offered in the Even semester by internal faculty for interested students belonging to all batches from our department and across disciplines

- **Microbial Quality control and testing**

Resolution:

Resolved to approve the Value Added Certificate Course for the even semester of the academic year 2023-2024.

Item 16.3: To approve the panel of examiners for question paper setting and evaluation of answer scripts for the even semester of the academic year 2023-2024.

The Chairman presented the panel of examiners for question paper setting and evaluation of answer scripts for the even semester of the academic year 2023-2024.

Resolution:

Resolved to approve the panel of examiners for question paper setting and evaluation of answer scripts for the even semester of the academic year 2023-2024.

Item 16.4: To consider and approve any other item brought forward by the Chairman and the members of the board.

No other item was brought forward.

Finally the Chairman thanked all the members for their cooperation and contribution in enriching the syllabus with active participation in the meeting and sought the same spirit in the future also. The meeting was closed with formal vote of thanks proposed by Dr. J. Rengaramanujam, Head and Chairman – Microbiology BoS.

Syllabus Revision

Faculty: Biosciences **Board: Microbiology**

Semester: IV

Course Code/ Name: 223MB1A4CA / Immunology

Unit	Existing	Changes
I	History and Scope of Immunology History and Scope of Immunology. The basis of defense mechanisms. Cells and Organs involved in immune system.	History and Scope of Immunology History and Scope of Immunology. The basis of defence mechanisms. Cells of immune system- Hematopoiesis, Lymphoid cells and Myeloid cells and Organs of immune system- Primary and Secondary lymphoid organs (Thymus, Bone marrow, Lymph node, Spleen). Phagocytosis
II	Types of immunity Types of immunity, Antigen and Antibody types, Complement pathways -Classical, alternate and lectin pathway. Immunoglobulin – structure, Isotypes, and functions.	Types of immunity Types of immunity- Cell mediated immunity, humoral immunity, Antigen and Antibody types, Complement pathways -Classical, alternate and lectin pathway; Apoptosis-types, inflammation. Immunoglobulin – structure, Isotypes, and functions.
III	Allergy and Hypersensitivity Allergy and Hypersensitivity - Classification types and Mechanisms.Autoimmunity mechanisms and autoimmune response diseases: cell specific: Systemic Lupus Erythematosis and Organ Specific: Myasthenia Gravis.	Allergy and Hypersensitivity Allergy and Hypersensitivity - Classification types and Mechanisms. Autoimmunity mechanisms and autoimmune response diseases: cell specific: Systemic Lupus Erythematosis and Organ Specific: Myasthenia Gravis
IV	Antigen-Antibody reactions: Antigen-Antibody reactions - Agglutination: Direct, indirect, RPR and Hemagglutination. Precipitation: Double Immuno Diffusion. ELISA. Radio immune assay (RIA).	Antigen-Antibody reactions Antigen-Antibody reactions - Agglutination: Direct, indirect, RPR and Hemagglutination. Precipitation: Counter Current electrophoresis, rocket electrophoresis, Double Immuno Diffusion. ELISA. Radio immune assay (RIA). Monoclonal antibodies and its applications.
V	Immuno hematology: Immuno hematology - Blood transfusion - ABO grouping - Rh factor. Tissue transplantation - HLA typing - Mechanism of acceptance and rejection.	Immuno hematology Immuno hematology - Blood transfusion - ABO grouping - Rh factor. Tissue transplantation - HLA typing - Mechanism of acceptance and rejection. Immunodeficiency disease: primary (Bruton disease), secondary (AIDS).

PERCENTAGE OF SYLLABUS REVISED: 32

COURSE FOCUS ON:

- [✓] Skill Development
- [✓] Entrepreneurial Development
- [✓] Employability
- [✓] Innovations
- [ ] Intellectual Property Rights
- [ ] Gender Sensitization
- [✓] Social Awareness/ Environment
- [ ] Constitutional Rights/ Human Values/ Ethics

Syllabus Revision

Faculty: Biosciences **Board: Microbiology**
Semester: IV
Course Code/ Name: 223MB1A4CP/ Food Microbiology

New syllabus

PERCENTAGE OF SYLLABUS REVISED: 100

COURSE FOCUS ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability		Innovations
	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

Syllabus Revision

Faculty: Biosciences **Board: Microbiology**
Semester: IV
Course Code/Name: 223MB1A4CQ/Immunology and Recombinant DNA technology

New syllabus

PERCENTAGE OF SYLLABUS REVISED: 100

COURSE FOCUS ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability		Innovations
	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

Syllabus Revision

Faculty: Biosciences **Board: Microbiology**

Semester: IV

Course Code/ Name: 223MB1A4SA / Recombinant DNA Technology

Unit	Existing	Changes
I	Gene manipulation – Restriction Enzymes – Discovery, types and mode of action, DNA Polymerases I,II & III, Taq polymerase, klenov fragment - Ligases - Methylases - Reverse transcriptase. Applications of Gene cloning.	• History • Scope of rDNA technology • Restriction modification system • Gene manipulating enzymes
II	Isolation and Purification of DNA(Chromosomal and Plasmid)- Isolation and Purification of RNA - Chemical Synthesis of DNA - Genomic Library and cDNA Library.	
III	Vectors – Plasmid based Vectors - Natural vectors – pSC101, pSF2124 and pMB1. Artificial vectors - pBR322 & pUC. Phage based Vectors- λ phage, P1 phage and M13 based Vectors. Hybrid Vectors - Phagemid, Phasmid and Cosmid, BAC and YAC.	• P1 phage • Artificial chromosomes • Eukaryotic vectors • Shuttle vectors
IV	Gene Transfer Techniques –Biochemical methods - calcium phosphate, DEAE dextran mediated, Lipofection. Physical methods - Electroporation, Microinjection, Partical bombardment, Ultrafection. Biological - Viral mediated transduction.	• Screening and Selection of recombinants, Direct Method, Selection by Complementation, Marker inactivation Methods. Indirect Methods - Immunological and Genetic Methods
V	PCR -Probe desigining, components, thermocycler. DNA Sequencing - Maxam - Gilbert sequencing, pyro sequencing, Sanger's sequencing and Next generation sequencing. Blotting - Southern and Northern Techniques.	• PCR -Probe desigining, components, thermocycler, DNA Sequencing - Maxam - Gilbert sequencing, pyro sequencing, Sanger's sequencing and Next generation sequencing, Blotting - Southern and Northern Techniques. • Screening: Direct: Antibiotic resistance, lacZ complementation (Blue-white selection), plaque phenotype, Indirect: Immunochemical detection, Nucleic acid hybridization, Blotting - Dot Blotting, Colony Blotting, Chromosome walking and Chromosome jumping

PERCENTAGE OF SYLLABUS REVISED: 42.15%

COURSE FOCUS ON:

- [✓] Skill Development
- [✓] Entrepreneurial Development
- [✓] Employability
- [✓] Innovations
- [✓] Intellectual Property Rights
- [ ] Gender Sensitization
- [ ] Social Awareness/ Environment
- [ ] Constitutional Rights/ Human Values/ Ethics

Syllabus Revision

Faculty: Biosciences **Board: Microbiology**
Semester: IV
Course Code/ Name: 223MB1A4IA/ Basic Microbiology

New syllabus

PERCENTAGE OF SYLLABUS REVISED: 100

COURSE FOCUS ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability		Innovations
	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

Syllabus Revision

Faculty: Biosciences **Board: Microbiology**
Semester: IV
Course Code/ Name: 223MB1A4IP/ IDC Practical- Microbiology

New syllabus

PERCENTAGE OF SYLLABUS REVISED: 100

COURSE FOCUS ON:

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability		Innovations
	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

Syllabus Revision

Faculty: Biosciences **Board: Microbiology**

Semester: IV

Course Code/ Name: 223MB2A4CA / Fermentation Technology

Unit	Existing	Changes
I	An introduction to fermentation process – The range of fermentation process - Microbial biomass, Enzymes, Metabolites, Recombinant products, Transformation processes - Component parts of Fermentation process - Fermentor types - Bioreactors for Aerobic fermentation Stirred Bioreactors - Reactors for immobilized cells - Heat exchange, Stirring and Mixing.	• Fermentor Design and Construction • Gas exchange and Mass transfer
II	Industrially important Microorganisms - Isolation (Primary and Secondary screening), Preservation and Strain improvement (Mutation, Recombination, Regulation, Gene technology and Use of Genetic methods.	
III	Upstream processing - Development of Inoculum for Fermentation process - Media for Industrial Fermentation – Formulation, Optimization and Sterilization, Various stages in Upstream (Inoculum preservation, Growth of the inoculum, Fermenter preculture and Production fermentation).	
IV	Fermentation Types and Cultures –Batch, Continuous, Fed-batch - Basic Growth Kinetics - Submerged and Solid state Fermentation - Downstream Processing - Recovery and Purification of Intracellular and Extracellular Products (Flocculation, Flotation, Filter systems, Centrifugation, Disintegration, Chromatography, Extraction, Crystallization, Precipitation and Drying).	
V	Microbial production of Organic acids (Citric acid and Acetic acid), Enzymes (Amylase and Protease), Aminoacids (Lysine and Glutamic acid), Antibiotics (Penicillin, Streptomycin and Griseofulvin), Vitamins (Riboflavin, Cyanocobalamine and Ascorbic acid) - Biosynthesis of Ergot alkaloids - Microbial transformation - Steroids and Sterols, Non-steroid compounds, Antibiotics and Pesticides.	

PERCENTAGE OF SYLLABUS REVISED: 3.7%

COURSE FOCUS ON:

✓	Skill Development		Entrepreneurial Development
✓	Employability		Innovations
	Intellectual Property Rights		Gender Sensitization
✓	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

Syllabus Revision

Faculty: Biosciences **Board: Microbiology**

Semester: IV

Course Code/ Name: 223MB1A2CA / BIOETHICS, BIOSAFETY AND IPR

Unit	Existing	Changes
I	Concepts of IPR - Designs - Trademarks - Trade secrets - Domain name - Geographical indications - Copy Rights - Evolution of patent law - History of Indian patent system - International conventions and treaties.	
II	Classification of patents by WIPO - Classification of patents in India - Categories of patent - Special patent - Patenting of biological products - Patentable and non-patentable inventions in India and abroad - Rights of patent holder and co-owner - Infringement of patent rights and offenses - Patenting life forms - Biodiversity and IPR - Bioinformatics patenting - Gene Patenting.	Case study on Patenting Process Overview.
III	Risk assessment - Cartagena protocol on biosafety - Capacity building - Biosafety guidelines in India evolved by DBT - Rules for the storage and manufacture of hazardous microorganisms and GMO - Bio safety management.	
IV	Classification of biological agents - Categories of bio hazardous waste - Labelling and disposal. General safety - Permit for the movement and import of GMOs - Biosafety issues of products developed by rDNA technology - Ecological safety assessment of recombinant organisms - Web based information on biosafety of GMOs.	
V	~~Bioethics and its scope - Different approaches to ethics - Biological weapons - social and ethical implications of biological weapons - Importance of Good Laboratory practices.~~	Bioethics in research – cloning and stem cell research, Human and animal experimentation, animal rights/ welfare, Agricultural biotechnology – Genetically engineered food, environmental risk, labeling and public opinion. Sharing benefits and protecting future generations - Protection of environment and biodiversity – Biopiracy.

PERCENTAGE OF SYLLABUS REVISED: 25

COURSE FOCUS ON:

- [✓] Skill Development
- [✓] Entrepreneurial Development
- [✓] Employability
- [ ] Innovations
- [ ] Intellectual Property Rights
- [ ] Gender Sensitization
- [ ] Social Awareness/ Environment
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BoS
16th

FACULTY OF BIOSCIENCES
DEPARTMENT OF MICROBIOLOGY
BOARD OF STUDIES MEETING

VENUE : INSTRUMENTATION ROOM (B1-1302)
DATE : 18.10.2023
TIME : 10.00 A.M.

ATTENDANCE OF THE 16TH BOARD OF STUDIES MEETING

S. NO.	NAME	POSITION	SIGNATURE
1	Dr. J. Rengaramanujam Professor and Head Department of Microbiology Dr. N.G.P Arts and Science College Coimbatore – 641 048	Chairman	
2	Dr. S. Murugan Associate Professor Karunya University Coimbatore – 641 114	Member (Subject Expert)	18/10/2023
3	Dr. K. Vijila Professor, Department of Agricultural Microbiology TNAU Coimbatore – 641 003	Member (Subject Expert)	
4	Dr. Chitra Tangavel Scientist Proteomics Mettupalayam Road Kavundampalayam Coimbatore - 641 043	Member (Industrial Expert)	18/10/2023
5	Dr. M. Gnanadesigan Assistant Professor, Department of Microbial Biotechnology Bharathiar University Coimbatore – 641 046	Member (Subject Expert Nominated by Vice Chancellor)	ABSENT

6	Durgadevi . S Quality Control of Microbiologist Amway India Enterprises Pvt. Lmt, Sipcot Industry Road, Pallapati, Dhindugal - 624201	Alumini	ABSENT
7	Nandhini. V. D (PG)	Student Representatives	Nandhini
	Thirisha. Y (UG)		Y. Thirisha.
8	Dr. N. Kuppuchamy Part – I (Four Semester Language)	Co – Opted Member	18/10/23
9	Dr. R. Vithya Prabha Part – II (Four Semester Language)		R V Prabha 18/10/23
10	Dr. P. Chidambara Rajan Allied		18/10/23
11	Dr. D. Geetharamani Professor, Dean - Academics	Member	18/10/23
11	Dr. S. S. Sudha Professor, CDC – Coordinator	Member	18/10/23
12	Dr. N. Vidhya Professor	Member	18/10/2023
13	Dr. S. Senthil Prabhu Professor	Member	18/10/23
14	Dr. A. M. Ramachandran Associate Professor	Member	18/10/23
15	Dr. C. Sasikala Associate Professor	Member	18/10/23
16	Dr. S. Karthiksundaram Associate Professor	Member	18/10/23
17	Dr. R. Mahenthiran Assistant Professor	Member	18/10/2023
18	Prof. M. Nivethitha Assistant Professor	Member	18/10/23
19	Dr. J. Devakumar Assistant Professor	Member	18/10/23

18/10/23

BoS Chairman/HOD
Department of Microbiology
Dr. N. G. P. Arts and Science College
Coimbatore - 641 048

Academic Council
CHAIRMAN
Dr.N.G.P. Arts and Science College