

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

(An Autonomous Institution, Affiliated to Bharathiar University, Coimbatore)

Approved by Government of Tamil Nadu and Accredited by NAAC A++ Grade (3rd Cycle- 3.64 CGPA)

Dr. N.G.P.-Kalapatti Road, Coimbatore-641048, Tamil Nadu, India

Web: www.drngpasc.ac.in | Email: info@drngpasc.ac.in | Phone: +91-422-2369100

16th

BoS

Board of Studies Meeting

Department of Biotechnology

The minutes of the 16th meeting of Board of Studies held on 17.10.2023 at 10.00 am at the B1-1213- Instrumentation Room.

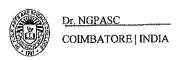
Members Present:

S.No.	Name	Category
1	Dr. P. Chidambararajan	Chairman /
2	Dr. P.T. Prathima	Subject Expert
3	Dr. M. Prasad	Industrial Expert
4	Dr. R. Suganthi	Member
5	Dr. K. Kalimuthu	Member
6	Dr. K. Arungandhi	Member
7	Dr. Arun P	Member
8	Dr. M.N. Kathiravan	Member
9	Dr. M. Shanmugavadivu	Member
10	Dr. S. Saranaya	Member
11	Mrs. C.R. Aarthi	Member
12	Dr. N. Kuppuchami	Co-opted Member
13	Dr. R. Vithya Prabha	Co-opted Member
14	Dr. K. Girija	Co-opted Member
15	Dr. B. Rosiline Jeetha	Co-opted Member
16	Mr. Deepesh Vasnani	Student Representative- UG
17	Ms. Dharani M	Student Representative- PG

The HoD and Chairman of the department of Biotechnology 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 members to attend the meeting and requested to grant leave of absence.

- 1. Dr. V. Vijaya Padma- University Nominee
- 2. Dr. S. Nakkeeran- Subject Expert
- 3. Dr. M. Poongothai- Member
- 4. Dr. Radha Palaniswamy- Member



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 10.06.2023.

The chairman of the Board presented the minutes of the previous meeting held on 10.06.2023 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 10.06.2023.

Item 16.1(a): To consider and approve the syllabi for II semester for the students admitted during the academic year 2023-24.

The chairman presented the detailed scheme and syllabus for the II semester for the students admitted from the academic year 2023-24 onwards. The details of changes made also presented as follows.

Changes Made: No changes required

B.Sc. Biotechnology		
Course	Code	Reason
M.Sc. Biotechnology		
Course	Code	Reason

New Courses Introduced:

Course	Code	Reason
-	Po Po	_
Counges Domestic J. NIV		

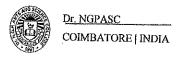
Courses Removed: NIL

Course	Code	Reason
-	-	-
IDC Occ. 1		

IDC Offered

Course	Code	Department
-	_	-
After diagnasion the fallacion 1 di		

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 2022-23.

The Chairman presented the detailed syllabus for the IV semester for the students admitted from the academic year 2022-23 onwards. The details of changes made also presented as follows:

Changes Made:

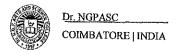
B.Sc. Biotechnology		
Course	Code	Reason
Core: Immunology	223BT1A4CA	Unit 1: To include the topics like "Infections and Immunity, Hematopoiesis, Cells of the immune system" for better understanding about the immune system Unit 3: "Treatment to Auto immune disorder" to be include for gaining knowledge about immune disorders. Unit 5: To incorporate topics like "Subunit Vaccines, RNA Vaccines and Protein Vaccines." To familiar with recent vaccine
		development.
Core Practical IV: Immunology and Bioinformatics.	223BT1A4CP	To expose and prepare students for a lucrative employment opportunity with demands on drug designing with "Molecular Docking"
M.Sc. Biotechnology		
Course	Code	Reason
Core: Pharmaceutical Biotechnology	223BT2A4CA	Unit 1:"Limitations in the enzyme production" for better understanding in enzyme production. Unit 3: "Bioavailability for all the pharmaceutical compounds and mention specifically the names of Phyto constituents" under herbal medicine. "Biosimilar drug and AI in drug development". Unit - IV: To include the "mRNA vaccines".



Core Practical VI- Pharmaceutical	223BT2A4CP	To include following experiment for
Biotechnology		-t-1-t-1
•		students to get exposure in pharmacokinetics
		1.
		"1. Extraction of Omega -3 Fatty acids
		from algae
Store Call Tarland		2. Determination of Enzyme activity."
Stem Cell Technology	223BT2A4DA	Unit 2: "Isolation and harvesting of Plant
		stem cells and their limitations".
		Unit 4: "Haematopoietic Stem Cells
		harvesting and limitations, Applications
		of haematopoietic Stem cells." For better
N. C.		understanding of the type of stem cells.

New Courses Introduced:

Course	Code	Reason
Core: Bioinformatics	223BT1A4CB	Unit 1: "Introduction to Bioinformatics
		and AI, and to specify the Commercial
		software with examples". To gain basics
		of bioinformatics.
		Unit 2: "Phylogenetic tree analysis",
		relocate to Unit 4 where the detailed topics
		are. "PIR (Protein Information
		Resource) and TrEMBL (Translated
		EMBL)". To hone the knowledge created in
		the field protein structure prediction.
		Unit 3: "Protein Structure prediction".
		Include for knowledge on structural
		information of protein.
		Unit 4: "MEGA tool and retrieval of
	-	sequence information from data base".
		To better understanding of gene
	,	evolutionary analysis.
		Unit 5: "Docking techniques" to essence
		the young minds and to stimulate the
Skill Enhancement Course- II-	223BT1A4SP	creativity on drug designing.
Recombinant DNA Technology	223BTTA4SP	To expose and prepare students for
recombinant DIVA Technology		employment opportunity in Molecular
		biology with hands on training on "Type of
M. Sc. Biotechnology		ELISA and Isolation of RNA".
Course		
Course	Code	Reason



Courses Removed: NIL

Course	Code	Reason
-	-	-

IDC Offered

Course	Code	Department
Bioinformatics	223BT1A4IC	Microbiology

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 approve the panel of examiners for question paper setting and evaluation of answer scripts for the even semester of the academic year 2023-24.

The Chairman presented the panel of examiners for question paper setting and evaluation of answer scripts for the even semester of the academic year 2023-24.

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 16.3: To consider and approve the syllabi for VACC for the students admitted during the academic year 2023-24.

The chairman presented the detailed syllabus for VACC- Protein Purification and Characterization for the students admitted from the academic year 2023-24 onwards.

Resolution:

Resolved to approve the syllabus for the students admitted from the academic year 2023-24 onwards.

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. P. Chidambararajan, Head and Chairman-Biotechnology BoS.

Dr. NGPASC DOL. 17. 10. 2023

BoS Chairman/HoD

Department of Biotechnology

Dr. N. G. P. Arts and Science College

Coimbatore – 641 048

Page | 5

B.Sc. Biotechnology Syllabus Revision

Board: Biotechnology

Faculty: Biosciences

Semester: IV

Course Code/Name: 223BT1A4CA/ IMMUNOLOGY

Unit	Existing	Revised
	History and scope of immunology - types of immunity - primary and secondary lymphoid organs - immunoglobulin structure - function and synthesis; memory cells, idiotye network, lymphocyte differentiation.	Infections and Immunity, Hematopoiesis, Cells of the immune system
iI	Complement systems - structure and function of MHC class I and II molecules -antigen recognition and presentation - Humoral and Cell mediated immuneresponses - immune suppression and immune tolerance - Transplantation immunology- Graft rejection.	-
III	Antigen- antibody reaction, Hypersensitivity - IgE mediated, antibody mediated, immune complex mediated and delayed type hypersensitivity. Tumor immunology-tumor associated antigens, Immune response to tumor. Auto immune disorders.	Treatment to Auto immune disorder
IV	Hybridoma and monoclonal antibody production, immune diagnosis and applications - human monoclonal antibodies, catalytical antibodies - complementfixation - assessment of immune complexes in tissues.	-
V	Vaccines- Immunization types- Vaccine types- live attenuated vaccines, killed vaccines and purified polysaccharide vaccines- toxoid vaccines – recombinant vaccines and DNA vaccines.	Subunit Vaccines,RNA Vaccines and Protein Vaccines

PERCENTAGE OF SYLLABUS REVISION -

COURSE FOCUS ON:

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

18 %

B.Sc. Biotechnology Syllabus Revision

Faculty: Biosciences

Semester: IV

Course Code/Name: 223BT1A4CB/ BIOINFORMATICS

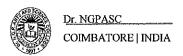
Unit	Existing	Revised
1	Big Data - Biological data. Retreival of	
	information. Evolution of Bioinformatics –	Commercial software (Geneious, CLC genomics
	history, scope and applications. Internet-	workbench, InsightII, GROMACS, AMBER)
	World wide web - search engines, Entrez,	
	PubMed. Commercial softwares used for	
	biological information	G - '1' 1 1 1 1 (CO)
l II	Types. Nucleic acid databases (NCBI, EMBL,	Specialized databases (Gene Ontology (GO),
	DDBJ), protein databases (PDB, Expasy, Swiss Prot, Prosite), specialized databases,	DrugBank, ChEMBL & KEGG) Model organism databases (FlyBase, Saccharomyces
	model organism databases. Phylogenetic trees	Genome Database (SGD), Mouse Genome Database
	- evolutionary relationship using PHYLIP	(MGD) & ZFIN)
111	Physical properties – structural and sequence	Protein Structure prediction (I-TASSER, Phyre2 and
"	database for proteins – CATH, SCOP, FSSP –	RaptorX).
	fold classification based on structure. Primary,	* <i>′</i>
	secondary, tertiary, super secondary structures	
	of proteins. Structure and functional	
	relationship of proteins	
IV	Introduction to sequence alignments and	Retrieval of sequence information from data base.
	dynamic programming: Local alignment,	Phylogenetic trees - evolutionary relationship using
	global alignment, pairwise and multiple alignment. FASTA – characteristics, BLAST	PHYLIP and MEGA tool-
	and its types. Gene expression analysis –	
	cDNA microarray. EST databases (DBEST,	
	UNIGENE).	
V	Docking - Principle, steps. Lead compound,	Lead Compound (Celecoxib as a lead COX-2
	protein target. Computer Aided Drug	inhibitor) Protein target (HIV protease for antivirals)
	Designing— applications. High throughput	CADD (SBDD & LBDD)
	screening- working and applications.	Molecular Modelling and visualization (PyMol)
	Molecular modelling and visualization.	
	QSAR. Human Genome project.	

PERCENTAGE OF SYLLABUS REVISION

: 35 %

COURSE FOCUS ON:

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



Board: Biotechnology

B.Sc. Biotechnology Core Practical Syllabus Revision-New Course

Faculty: Bioscience

Semester: IV

Board: Biotechnology

Course Code/ Name:223BT1A4CP - Core Practical - IV: IMMUNOLOGY & BIOINFORMATICS

Exp. No.	Existing	Revised
1.	Blood grouping and Rh typing *	Molecular Docking
2.	Preparation of Serum	
3.	Precipitin ring test	
4.	Single Radial Immunodiffusion	
5.	Double Radial Immunodiffusion	
6.	Immunoelectrophoresis	
7.	Rocket Immunoelectrophoresis	
8.	Retrieving data from Biological Databases*	
9.	Retrieving articles with filter criteria (PubMed)	
10.	Pairwise alignment using BLAST	
11.	Construction of phylogenetic trees	
12.	Visualization of protein structures and interpretation	

PERCENTAGE OF SYLLABUS REVISION : 8 %

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

B.Sc. Biotechnology Syllabus Revision (Embedded SEC)-New Course Faculty: Bioscience

Board: Biotechnology

Semester: IV

Course Code/ Name: 223BT1A4EP – SEC-II: RECOMBINANT DNA TECHNOLOGY

Exp. No.	Content	
1.	Isolation of plasmid DNA	
2.	Isolation of Genomic DNA from Animal, Plant and Bacteria	
3.	Isolation of RNA	
4. Restriction Mapping		
5.	Ligation	
6. Polymerase Chain Reaction		
7.	Restriction Fragment Length Polymorphism (RFLP)	
8.	Random Amplified Polymorphic DNA (RAPD)	
9.	Western Blotting	
10.	ELISA	

PERCENTAGE OF SYLLABUS REVISION : 100 %

✓	Skill Development	1	Entrepreneurial Development
✓	Employability		Innovations
	Intellectual Property Rights		Gender Sensitization
Y	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

B.Sc. Biotechnology Syllabus Revision - New Course

Faculty: Biosciences

Semester: IV

Board: Biotechnology

Unit	Course Code/ Name: 223BT1A4IC/ IDC-Bioinformatics Content
Ī	Basics of Cell-Chromosome-Genome-Genes and DNA-Central Dogma. Introduction to DNA sequencing - Illumina, Pyro 454 and Ion torrent. Biological Databases: DNA sequence Database-Protein Database and Sequence analysis tools.
II	Genome Mapping-Assembly and Comparison. Structural and Functional Genomics. RNA sequencing and Transcriptomics. Gene Prediction: Computational Methods of Gene Prediction, difficulties and application of gene prediction.
III	Introduction to protein structure, visualization, comparison and classification. Secondary and tertiary protein structure prediction using bioinformatics tools and methods of protein modeling.
IV	Introduction to CADD and drug discovery process. Structural Bioinformatics in drug discovery-SAR and QSAR techniques in drug design. Molecular docking and AutoDock tools.
V	Introduction to Bioinformatics search tools-Entrez and ExPASy. Sequence alignment: DNA Sequence analysis-Protein sequence analysis-Pairwise and Multiple sequences Alignment. Database search-Motif Search (Protein Motifs and Domain Prediction)-Molecular Modeling and Phylogenetic tree construction and analysis.

PERCENTAGE OF SYLLABUS REVISION

: 100 %

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

M.Sc. Biotechnology Syllabus Revision

Faculty: Biosciences

Semester: IV

Course Code/ Name: 223RT2A4CA/ Pharmaceutical Riotechnology

Board: Biotechnology

	Course Code/ Name: 223BT2A4CA/ Pl	harmaceutical Biotechnology
Unit	Existing	Revised
I	Properties – dynamics of enzymatic activity, sources, extraction and purification: Applications pharmaceutical, therapeutic and clinical. Production of amyloglucosidase, glucose isomersase, amylase and trypsin. Immobilization – applications – perspective of enzyme engineering.	Limitations in the enzyme production
Π	Introduction to active constituents - isolation, classification, properties. Systematic pharmacognostic study of a) Carbohydrates and derived products: agar, guar gumm acacia, Honey, Isabgol, pectin, Starch and sterculia b) Lipids: Bees wax, Castor oil, Cocoa butter, Cod-liver oil, Kokum butter, Lard, RiceBran oil, Sharkliver oil and Wool fat.	_
m	Herbal Medicines – Characteristics, Efficacy, importance, allergic reactions. Principles - Ayurveda, Unani, Siddha, Homepathy. Drugs derived from Animal –Gelatin, Glycerin, Heparin, Lanolin, Premarin, Animal vaccines. Pharmaceutics from Marine source – Cytarabine, Zicomotide, Omega – 3- acid ethyl ester, Trabectodin, Brentuximab vadotin.	Allergic reactions of alkaloids, flavonoids, Terpenoids and Phenolics. Bioavailability of pharmaceutical compounds. Biosimilar Drugs and AI in drug Development
IV	DNA Vaccine construction and immunology, DNA vaccine expression, plasmid delivery of DNA vaccines. Bacterial vaccines and preparation. Peptide vaccine. Antitoxins. Serum-immune blood derivatives and immunity related products. Gene Pharming.	mRNA vaccines
V	Estimation of toxicity LD 50 and ED 50. Immunogenicity of biopharmaceuticals: Factors contributing to immunogenicity (product-related factors, host-related factors), Measurement of immunogenicity. Consequence of immunogenicity to biopharmaceuticals. Neutraceuticals. Economics of drug development.	-

PERCENTAGE OF SYLLABUS REVISED: 17%

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

M.Sc. Biotechnology Syllabus Revision

Faculty: Biosciences Semester: IV

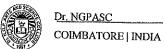
Board: Biotechnology

Course Code/ Name: 223BT2A4DA/ Stem Cell Technology

Comparison Com		ourse Code/ Name: 223BT2A4DA/ Stem	Cell Technology
cells – concepts of stem cells – differentiation , maturation , proliferation , pluripolericy, self – maintainance andself	Unit		Revised
differentiation , maturation , proliferation , pluripolericy, self – maintainance andself – renewal – problems in measuring stem cells – preservation protocols. II Stem cell and founder zones in plants – particularly their roots – stem cells of shoot meristems of higher plants. III Skeletal muscle stem cell – Mammary stem cells – intestinal stem cells – keratinocyte stem cells of cornea – skin and hair follicles – Tumour stem cells, Embryonic stem cell biology – factors influencing proliferation and differentiation of stem cells – hormone role in differentiation. IV Biology – growth factors and the regulation of haemopoietic stem cells. V Cellular therapies – vaccines – gene therapy – immunotherapy – tissue engineering	1	Scope of stem cells – definition of stem	
pluripolericy, self – maintainance andself – renewal – problems in measuring stem cells – preservation protocols. II Stem cell and founder zones in plants – particularly their roots – stem cells of shoot meristems of higher plants. III Skeletal muscle stem cell – Mammary stem cells – intestinal stem cells – keratinocyte stem cells of cornea – skin and hair follicles – Tumour stem cells, Embryonic stem cell biology – factors influencing proliferation and differentiation of stem cells – hormone role in differentiation. IV Biology – growth factors and the regulation of haemopoietic stem cells. For better understanding of the type of stem cells. V Cellular therapies – vaccines – gene therapy – immunotherapy – tissue engineering		cells – concepts of stem cells –	
pluripolericy, self – maintainance andself – renewal – problems in measuring stem cells – preservation protocols. II Stem cell and founder zones in plants – particularly their roots – stem cells of shoot meristems of higher plants. III Skeletal muscle stem cell – Mammary stem cells – intestinal stem cells – keratinocyte stem cells of cornea – skin and hair follicles – Tumour stem cells, Embryonic stem cell biology – factors influencing proliferation and differentiation of stem cells – hormone role in differentiation. IV Biology – growth factors and the regulation of haemopoietic stem cells. For better understanding of the type of stem cells. V Cellular therapies – vaccines – gene therapy – immunotherapy – tissue engineering		differentiation, maturation, proliferation,	
- renewal – problems in measuring stem cells – preservation protocols. Stem cell and founder zones in plants – particularly their roots – stem cells of shoot meristems of higher plants. Skeletal muscle stem cell – Mammary stem cells – intestinal stem cells – skeratinocyte stem cells of cornea – skin and hair follicles – Tumour stem cells, Embryonic stem cell biology – factors influencing proliferation and differentiation of stem cells – hormone role in differentiation. IV Biology – growth factors and the regulation of haemopoietic stem cells. III Biolation and harvesting of Plant stem cells and their limitations. III Isolation and harvesting of Plant stem cells and their limitations. III Isolation and harvesting of Plant stem cells and their limitations. III Isolation and harvesting of Plant stem cells and their limitations. III Isolation and harvesting of Plant stem cells and their limitations. III Isolation and harvesting of Plant stem cells and their limitations. III Isolation and harvesting of Plant stem cells and their limitations. III Isolation and harvesting of Plant stem cells and their limitations.		pluripolericy, self – maintainance andself	
Cells - preservation protocols.		- renewal - problems in measuring stem	
Isolation and harvesting of Plant stem cells and their particularly their roots – stem cells of shoot meristems of higher plants. III Skeletal muscle stem cell – Mammary stem cells – intestinal stem cells – keratinocyte stem cells of cornea – skin and hair follicles – Tumour stem cells, Embryonic stem cell biology – factors influencing proliferation and differentiation of stem cells – hormone role in differentiation. IV Biology – growth factors and the regulation of haemopoietic stem cells. V Cellular therapies – vaccines – gene therapy – immunotherapy – tissue engineering Isolation and harvesting of Plant stem cells and their limitations. IV Isolation and harvesting of Plant stem cells and their limitations.		cells – preservation protocols.	
particularly their roots – stem cells of shoot meristems of higher plants. III Skeletal muscle stem cell – Mammary stem cells – intestinal stem cells – keratinocyte stem cells of cornea – skin and hair follicles – Tumour stem cells, Embryonic stem cell biology – factors influencing proliferation and differentiation of stem cells – hormone role in differentiation. IV Biology – growth factors and the regulation of haemopoietic stem cells. Biology – growth factors and the regulation of haemopoietic stem cells. V Cellular therapies – vaccines – gene therapy – immunotherapy – tissue engineering	II	Stem cell and founder zones in plants -	Isolation and harvesting of Plant stem cells and their
Skeletal muscle stem cell – Mammary stem cells – intestinal stem cells – keratinocyte stem cells of cornea – skin and hair follicles – Tumour stem cells, Embryonic stem cell biology – factors influencing proliferation and differentiation of stem cells – hormone role in differentiation. IV Biology – growth factors and the regulation of haemopoietic stem cells. Biology – growth factors and the regulation of haemopoietic stem cells. V Cellular therapies – vaccines – gene therapy – immunotherapy – tissue engineering		particularly their roots – stem cells of	limitations.
Skeletal muscle stem cell – Mammary stem cells – intestinal stem cells – keratinocyte stem cells of cornea – skin and hair follicles – Tumour stem cells, Embryonic stem cell biology – factors influencing proliferation and differentiation of stem cells – hormone role in differentiation. IV Biology – growth factors and the regulation of haemopoietic stem cells. Biology – growth factors and the regulation of haemopoietic stem cells. V Cellular therapies – vaccines – gene therapy – immunotherapy – tissue engineering		shoot meristems of higher plants.	
cells – intestinal stem cells – keratinocyte stem cells of cornea – skin and hair follicles – Tumour stem cells, Embryonic stem cell biology - factors influencing proliferation and differentiation of stem cells – hormone role in differentiation. IV Biology – growth factors and the regulation of haemopoietic stem cells. Biology – growth factors and the regulation of haemopoietic stem cells. Haematopoietic Stem Cells harvesting and limitations, Applications ofhaematopoietic Stem cells. For better understanding of the type of stem cells.	III	Skeletal muscle stem cell – Mammary stem	
hair follicles –Tumour stem cells, Embryonic stem cell biology - factors influencing proliferation and differentiation of stem cells – hormone role in differentiation. IV Biology – growth factors and the regulation of haemopoietic stem cells. Biology – growth factors and the regulation of haemopoietic stem cells. Haematopoietic Stem Cells harvesting and limitations, Applications of haematopoietic Stem cells. For better understanding of the type of stem cells. V Cellular therapies – vaccines – gene therapy – immunotherapy – tissue engineering		cells – intestinal stem cells –	
hair follicles –Tumour stem cells, Embryonic stem cell biology - factors influencing proliferation and differentiation of stem cells – hormone role in differentiation. IV Biology – growth factors and the regulation of haemopoietic stem cells. Biology – growth factors and the regulation of haemopoietic stem cells. Haematopoietic Stem Cells harvesting and limitations, Applications of haematopoietic Stem cells. For better understanding of the type of stem cells. V Cellular therapies – vaccines – gene therapy – immunotherapy – tissue engineering		keratinocyte stem cells of cornea - skin and	
Embryonic stem cell biology - factors influencing proliferation and differentiation of stem cells - hormone role in differentiation. IV Biology - growth factors and the regulation of haemopoietic stem cells. Biology - growth factors and the regulation of haemopoietic stem cells. Haematopoietic Stem Cells harvesting and limitations, Applications of haematopoietic Stem cells. For better understanding of the type of stem cells. V Cellular therapies - vaccines - gene therapy - immunotherapy - tissue engineering		hair follicles – Tumour stem cells,	
Influencing proliferation and differentiation of stem cells — hormone role in differentiation. IV Biology – growth factors and the regulation of haemopoietic stem cells. Biology – growth factors and the regulation of haemopoietic stem cells. Haematopoietic Stem Cells harvesting and limitations, Applications of haematopoietic Stem cells. For better understanding of the type of stem cells. V Cellular therapies – vaccines – gene therapy – immunotherapy – tissue engineering		Embryonic stem cell biology - factors	
of stem cells — hormone role in differentiation. IV Biology — growth factors and the regulation of haemopoietic stem cells. Biology — growth factors and the regulation of haemopoietic stem cells. Haematopoietic Stem Cells harvesting and limitations, Applications of haematopoietic Stem cells. For better understanding of the type of stem cells. V Cellular therapies — vaccines — gene therapy — immunotherapy — tissue engineering		influencing proliferation and differentiation	
differentiation. Biology – growth factors and the regulation of haemopoietic stem cells. Haematopoietic Stem Cells harvesting and limitations, Applications of haematopoietic Stem cells. For better understanding of the type of stem cells. V Cellular therapies – vaccines – gene therapy – immunotherapy – tissue engineering		of stem cells – hormone role in	*
of haemopoietic stem cells. V Cellular therapies – vaccines – gene therapy – immunotherapy – tissue engineering Haematopoietic Stem Cells harvesting and limitations, Applications of haematopoietic Stem cells. For better understanding of the type of stem cells.		differentiation.	
of haemopoietic stem cells. V Cellular therapies – vaccines – gene therapy – immunotherapy – tissue engineering Haematopoietic Stem Cells harvesting and limitations, Applications of haematopoietic Stem cells. For better understanding of the type of stem cells.	177		
V Cellular therapies – vaccines – gene therapy – immunotherapy – tissue engineering	10	Biology – growth factors and the regulation	
V Cellular therapies – vaccines – gene therapy – immunotherapy – tissue engineering		of haemopoietic stem cells.	
- immunotherapy – tissue engineering			Applications of naematopoietic Stem cells. For hetter understanding of the true of the standard standa
- immunotherapy - tissue engineering	V	Cellular therapies – vaccines – gene therapy	octor understanding of the type of stem cells.
- blood and bone marrow - Fc cells.		- immunotherapy - tissue engineering	
		- blood and bone marrow - Fc cells.	

PERCENTAGE OF SYLLABUS REVISED: 15%

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



M.Sc. Biotechnology Core Practical Syllabus Revision

Faculty: Bioscience

Board: Biotechnology

Semester: IV

Course Code/ Name: 223BT2A4CP - Core Practical - VII: PHARMACEUTICAL BIOTECHNOLOGY

Exp.	Existing	Changed
No.		
1.	Isolation of Animal Tissues: Intestinal Muscle Preparations	Extraction of Omega 3 fatty acids from algae
2.	Isolation of Animal Tissues: Skeletal Muscle Preparations, Cardiac Muscle Preparations	Determination of Enzyme Activity
3.	In-Vitro Evaluation of Hepatoprotective Drugs	
4.	Evaluation of Antioxidant Activity Using Cell Based Assay Method	
5.	Sterility Testing of Pharmaceutical Drugs	
6.	In-Vitro Genotoxicity Assay	
7.	Mouse Lymphoma Assay (L5178Y TK+/- mouse lymphoma cells)	
8.	Evaluation the extent of DNA damage by In-Vitro Comet assay	
9.	In-Vitro Teratogenicity Testing of the drug	
10.	Pathological Condition Analysis of Animal Tissues by Histopathology	

PERCENTAGE OF SYLLABUS REVISED: 20%

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



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

(An Autonomous Institution, Affiliated to Bharathiar University, Coimbatore)

Approved by Government of Tamil Nadu and Accredited by NAAC with 'A++' Grade (3rd Cycle-3.64 CGPA) Dr. N.G.P. - Kalapatti Road, Coimbatore-641048, Tamil Nadu, India Web: www.drngpasc.ac.in | Email:info@drngpasc.ac.in | Phone: +91-422-2369100

BoS

16th

ATTENDANCE OF THE SEXTEENTH BOARD OF STUDIES MEETING

Faculty: Biosciences

Board: Biotechnology

Date: 17/10/2023 Time: 10.00 a.m.

Venue: Department of Biotechnology (Room. No: 1213)

The following members were present for the Board of Studies meeting

S. No	Name	Designation	Signature
1.	Dr. P. Chidambara Rajan Professor and Head	Chairman	2- ambour 8 ot
2.	Dr. V. Vijaya Padma Professor, Department of Biotechnology Bharathiar University, Coimbatore	University Nominee	ABSENT
3.	Dr. S. Nakkeeran Dean i/c, Agricultural College and Research Institute, Kudumiyanmalai, Pudukkottai	Subject Expert	ABSENT
4.	Dr. P.T. Prathima, Senior Scientist, Crop Improvement Division, ICAR-Sugarcane Breeding Institute, Coimbatore	Subject Expert	Spline matri
5.	Dr. M. Prasad R&D Executive — Industrial Enzymes Marisym Biologicals Private Limited, Coimbatore	Industrial expert	M. Let 17/10/23
6.	Dr. N. Karthikeyan Project Coordinator, Regional Sericulture & Research Center, Salem	Alumni	ABSENT
7.	Mr. Deepesh Vasnani III B.Sc. Biotechnology Ms. Dharani M II M.Sc. Biotechnology	- Student Representatives	A Charani
8.	Part I (Language I) Dr. N. Kuppuswamy Professor and Head Department of Tamil	Co-opted member	18076



BoS

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

(An Autonomous Institution, Affiliated to Bharathiar University, Coimbatore)

Approved by Government of Tamil Nadu and Accredited by NAAC with 'A++' Grade (3rd Cycle-3.64 CGPA)

Dr. N.G.P. - Kalapatti Road, Coimbatore-641048, Tamil Nadu, India

Web: www.dmgpasc.ac.in | Email:info@drngpasc.ac.in | Phone: +91-422-2369100

 16^{th}

	Part II (Language II)		
9.	Dr. R. Vithya Prabha	Co-opted member	I Strand
	Professor and Head		R1-6 P 10/10/03
	Department of English		
	Allied - IDC- Chemistry Physics	Co-opted member	-2-
10.	Dr. K. Girija		WH 101-410/2023
	Assistant Professor and Head i/c		13/1 15/10/
	Department of Physics		V '
	Allied - IDC- Python for Biologists		
11.	Dr. B. Rosiline Jeetha	Co-opted member	1 h hurrol
11.	Professor and Head	Co-opted memoer	1 (1) 2 (1) 1
	Department of Computer Science		
12.	Dr. K. Kalimuthu	Internal Member	In a la lux yell
12.	Professor		Colar Mas
13.	Dr. R. Suganthi	Internal Member	1 0 4 /1 /01
35.	Professor		6) /(+'
14.	Dr. K. Arungandhi	Internal Member	1 1 Mins
1	Professor		
15.	Dr. Arun. P	Internal Member	Ochtas
	Professor		
16.	Dr. M.N. Kathiravan	Internal Member	I have the
	Professor		1 /2,
17.	Dr. M.Shanmugavadivu	Internal Member	MANTERE
	Associate Professor		
18.	Dr. M.Poongothai	Internal Member	ABSENT
	Associate Professor		
19.	Dr. Radha Palaniswamy	Internal Member	ABSENT
	Assistant Professor		5. 6
20.	Dr. S. Saranya Assistant Professor	Internal Member	1 A Trol 23
21.	Mrs. C.R. Aarthi		A .
	Assistant Professor	Internal Member	1 data Trolu
	Assistant Floressor	<u>'</u>	(4/

Date: 17/10/2023

(Dr. P. Chidambararajan)

Chairman

BoS Chairman/HoD Department of Biotechnology Dr. N. G. P. Arts and Science College Ceimbatore - 641 048



