

## **BIOTECHNOLOGY**

Minutes of the 2<sup>nd</sup> BOS Meeting  
Held on Saturday, 11<sup>th</sup> January, 2020

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### **Following members were present;**

1. Mrs. Suparna Deepak	HOD/Chairperson
2. Mrs. Meenakshi Johri	Member
3. Mrs. Bindu Rajaguru	Member
4. Dr. Remya Varadarajan	Member
5. Dr. Mansee Thakur	Subject Expert
6. Dr. Varsha Kelkar Mane	Vice Chancellor Nominee
7. Dr. Usha Padmanabhan	Industry Expert
8. Dr. P. S. Goyal	Faculty Specialist
9. Dr. Gajanan Wader	Principal
10. Mrs. Deepika Sharma	Vice Principal

Meeting started at 12.00 noon under the chairmanship of Mrs. Suparna Deepak

1. To discuss pattern of revision in the syllabus undertaken uniformly by all the subject teachers.
2. To discuss and finalize the revision in the syllabus of subjects under Department of Biotechnology.
3. To discuss and finalize Question paper pattern for sem 2, 4 and 6.
4. To recommend the approved syllabus to Academic Council.
5. To do the verification of the question papers for sem 1, 3 and 5
6. Any other matter with the permission of Chair

### **Agenda 1: To discuss pattern of revision in the syllabus undertaken uniformly by all the subject teachers.**

The Board of Studies members reviewed the change in syllabus made by the respective subject teachers related to Biotechnology subjects. The Chairperson intimated the members that syllabus has been revised to the extent of 5% to 10% changes. Theory syllabus of Post Graduate course

not changed for academic year 2019-20 due to lack of time. It is kept at par with syllabus of University of Mumbai.

**Agenda 2: To discuss and finalise the revision in the syllabus of subjects under Department of Biotechnology.**

1. Dr. Varsha Kelkar, the Vice- Chancellor's nominee suggested to remove catalytic RNA from unit III of paper I semester II and instead add miRNA and siRNA in the types of RNA
2. She also wanted the areas of applications of redox reactions to be specified in the syllabus for paper II semester II with more preference to biological role.
3. Dr. Usha Padmanabhan, senior scientist, Haffkine Institute gave the suggestion to mention the application of secondary metabolites in life-science I paper of semester II as that topic is very vast
4. Dr. Mansee Thakur, Director, MGM School of Biomedical Sciences, Kamothe, Navi Mumbai, the other university representative advised to not include all the gene mapping techniques in life-science II paper instead include introduction to gene mapping with one detailed mechanism of gene mapping by conjugation.
5. Dr. Varsha instructed to retain the topic role of population genetics in conservation biology as that is asked in competitive exams.
6. In Biotech-I paper of semester II, Dr. Usha was of the opinion to remove general metabolism of animal cells and growth factors and teaching role of serum in medium in details
7. Dr. Goyal, Dean, R&D, Pillai College of Engineering recommended to contact the people working for springer publication and to arrange a lecture on scientific writing to provide a practical approach, a session on plagiarism software should be included in the syllabus.
8. In foundation course for F.Y.B.Sc, Dr. Mansee advised to follow the NAAC guidelines and include the topics like gender sensitization and human values.
9. Dr. Varsha proposed to specify the disorders associated with synthesis of amino acids and to include mobilization in correlation to adipose tissue in biochemistry paper of semester IV.
10. Dr. Goyal was of the opinion that the biomedical uses of synthetic polymer and biopolymer should be included in applied chemistry paper of semester IV.
11. All the BOS members presented the idea to restructure the medical microbiology paper of semester IV in unit II. They recommended to keep characteristics transmission course of infection lab diagnosis management and prevention common and include 5 organisms namely *S.aureus*, *S.pyogenes*, *M.tuberculosis*, *S.pneumoniae* and *E.coli* & *Proteus* spp. In unit ,3 *Salmonella*, *Shigella*, *P.aeruginosa*, HIV and *Candida* should be included.
12. For Environmental Biotechnology paper of semester IV & semester VI, Dr. Mansee recommended to follow the syllabus proposed for environmental science by UGC.

13. Dr. Mansee opined to remove the areas in molecular diagnostics and restriction enzyme mapping in unit 1 of paper VI of semester IV. She also suggested including molecular testing of TB and Candida and exclude *Neisseria*.
14. Dr. Varsha suggested to change the topic from Alzheimer's disease to amyloidosis and to include Prions in protein misfolding for biochemistry paper of semester VI.
15. All the BOS members thought that including all the vitamins and minerals in the unit IV of Biochemistry was a burden for the students. So they recommended including only dietary sources and role in metabolism/ physiology of A, D, C, B12 and folic acid and only important 4 macro and 4 micro minerals.
16. Dr. Goyal proposed to include the production of mushroom in Industrial Biotech paper of semester IV
17. Lot of discussion was done on pharmacology and neurochemistry paper of TYBSC and consensus was reached to include the absorption of major 5 organs: lungs, brain, heart, kidney and liver. Everyone instructed to remove incapacitating agents. They suggested to retain anatomy of brain and include structure of neurons & types and addition
18. Dr. Varsha instructed not to remove any practical's from M.Sc Part I syllabus as it designed with respect to DBT. If it is not possible to take up all the practical's in the lab, some videos or virtual lab can be shown to the students

After the discussions, the Board approved the revision/changes in the syllabus of following subjects for SEM II, IV & VI

**B. Sc Biotechnology**  
**2019-20**  
**Syllabus Change of 5-10 %**  
**TERM II**

Sr. No	Name of the Subject	Subject Teacher	Topic Added	Topic Removed	Reason for Replacement/ addition	Reference for Added Topic	15 Internal Marks Allocation
<b>Semester II</b>							
1.	Chemistry -I	Kaynath Sayyed and Ms. Bhakti Hirani	miRNA, siRNA Renaturation of Protein	glycoproteins	Glycoprotein is already covered under classification of proteins. miRNA, siRNA is not included under types of	Biochemistry – 4 <sup>th</sup> Edition by U. Satyanarayan and U. Chakrapani (Elsevier)	Assignment

					RNA.		
2	Chemistry -II	Kaynath Sayyed	Zero order reaction.  Applications of redox reactions.	--	To make them identify different order of reaction. Uses of redox are not included in earlier syllabus.	Principals of physical chemistry by Puri Sharma Pathania	Assignment
3.	Life Science-I	Ms. Aswathi Gangadharan	Applications of secondary metabolites.	-	Along with introduction to secondary metabolites they will get an idea how it can be applied in practical life.	Plant Tissue Culture by K.G. Ramavat	Assignment
4	Life Science-II	Dr. Navami Dayal	Introduction of Gene mapping, Gene Mapping using conjugation,  Factors affecting Hardy-Weinberg Law	Measuring genetic variation in Population at Protein and DNA level, Role of Population Genetics in	Along with mechanism of Genetic exchange in bacteria, how it could be applied in gene mapping also needs to be studied.  Along with assumption of Hardy-Weinberg Law, studying of factors affecting Hardy-Weinberg Law is also essential.	Essential iGenetics-Peter Russell - Pearson Education	Assignment

5	Biotechnology-I	Ms. Bindu Rajaguru	Cell Suspension Cultures: Introduction, Principle and Protocols	General Metabolism	The concept will give a complete overview of the how the concept of plant tissue culture works for both micropropagation as well as for the production of secondary metabolites.	Plant Tissue Culture – Kalyan Kumar De	Assignment
6	Biotechnology-II	Mr.Gopakumar Pillai and Ms. Bhakti Hirani	Units of enzyme activity, Isoenzymes, Immobilized enzymes, Overview of Cytokines	Antigen-Antibody interactions	Students are not studying cytokines in their UG syllabus  It is removed as it is covered in detail in second year	Immunology by Kuby	Assignment
7	Foundation Course I	Ms. Suprita Rohit	Upgrading systems to decrease negative impact of globalization Role of United Nations in protection of human Rights Human Right violations Ecological stability	--	To complete the unit which lacked a talk on UN and violations of human rights	Michael Vaz, Madhu Nair, Meeta Seta, Skill Enhancement Course (SEC), Foundation Course Semester-II, Published By: Manan Praskasha	Assignment

			Innovations for Sustainable development, Gender Sensitization, Human Values.			n Maiese, Michelle. "Human Rights Violations." <i>Beyond Intractability</i> . Eds. Guy Burgess and Heidi Burgess. Conflict Information Consortium, University of Colorado, Boulder.	
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<b>Semester IV</b>							
1.	Biochemistry	Dr. Remya Varadara jan	Diseases associated with Nucleic acid metabolism: Primary and Secondary Gout	Not removed any topics	Diseases associated with Nucleic acid metabolism is not mentioned in the syllabus	Biochemistry : U Satyanarayan (Second edition)	Project work
2.	Applied Chemistry-	Kaynath Sayyed	Structure and uses of		Terpenes are an important	Chemistry of natural	Project work

	II		terpenes, Biomedical uses of synthetic polymers and Biopolymers		type of natural product with many applications. Biomedical use of polymers is an enhancing topic.	products- by S.V.Bhat. Principles of polymer chemistry- by Paul J.Flory	
3	Medical Microbiology	Ms. Meenakshi Johri	Reservoir of infection  FDA approved new drugs for treatment of TB  HIV, Candida	Syphilis, Gonorrhoea	Important to understand acquisition of infection  Students must know new drugs available for the treatment of drug resistant TB	Microbiology by Prescott  Online articles	Project work
4	Environmental Biotechnology	Ms. Jyoti Kadam	Causes, effect and control measures of marine pollution		Type of soil erosion must be known by the students so that they can understand the cause and effects.		Project work
5	Biostatistics and Bioinformatics	Ms. Suparna Deepak and Ms. Suprita Rohit	Protein Structure Databases: PDB, NDB, PubChem Model Organism Databases:SGD, MGD, FlyBase, Wormbase	DNA Sequence Databases Specialized Genomic Resources.	Knowledge of Protein structure databases is important.  Without the understanding of scoring	Bioinformatics and Functional Genomics by Pevsner  Bioinformatics:	Project work

			Homology; Scoring matrices: basic concept of a scoring matrix, PAM and BLOSUM series, Dot Matrix		matrices, students can't define homology.	Methods and Applications. S. C. Rastogi	
6	Molecular Diagnostics	Dr. Navami Dayal and Ms. Aswathi Gangadharan	Eastern blotting  HIV, Candida	Restriction Mapping,  Niesseria	Restriction endonuclease is covered in F.Y sem I. Eastern blotting is they are not studying anywhere.	Molecular diagnostics - Fundamentals, methods and applications - Buckingham.	Project work
7	Entrepreneurship Development	Gopalkrishna Pillai	Examples of Biotech Entrepreneurs	None	The stories of Biotech entrepreneurs will motivate the students.	Internet	Project work

Sr. No.	Name of the Subject	Subject Teacher	Topic Added	Topic Removed	Reason for Replacement	Reference for Added Topic	15 Internal Marks Allocation
<b>Semester VI</b>							
1.	Biochemistry	Dr. Remya Varadarajan and Dr. Navami Dayal	Protein misfolding & diseases - Amyloidosis disease, Prions	Immunoglobulins - Ligand binding	Already covered in SY	Karp	Review Article



2.	Industrial Microbiology	Ms. Meenakshi Johri,  Ms. Jyoti Kadam,	Two phase aqueous extraction  Amylase and mushroom Production	None  Ethanol production	Students must know this technique for product recovery  Ethanol production is already studied in F.Y  As this enzyme is used much in food industries so the students should know about the production of amylase enzyme	Principles of fermentation technology by Stanbury A. H. Pатель 1 2nd Ed B. Prescott and Dunn  Pepler , Vol I Industrial microbiology by Casida ,	Review Article
3	Basic Pharmacology and Neurochemistry	Dr. C. K. Prashanth and Ms. Bhakti Hirani	Drug discovery process, Basic pharmacokinetic parameters, Absorption of drugs in brain, heart, kidney, liver.  Structure of neurons and types Addiction	Absorption of drugs in skin  functioning of the brain	Basic knowledge for students' understanding.  Important topics not covered in neurochemistry  They have studied anatomy of brain in lower level	Biochemistry – David Metzler (Volume 2)	Review Article

4	Environmental Biotechnology	Ms. Bindu Rajaguru and Ms. Suprita Rohit	Biorefinery, Analysis of hazardous waste management carried out at industrial level.	--	To give an insight to the concept of Biorefinery and current system of wastewater management and industrial waste management actually carried out .		Review Article
5	Agribiotechnology	Ms. Jyoti Kadam and Mr.Gopakumar Pillai	Preparation of <i>Azotobacter</i> and rhizobial biofertilizers		Practically relevant		Review Article

**Agenda 3: To discuss and finalise Question paper pattern for sem 2, 4 and 6.**

The question paper pattern was discussed and finalized with 60:40 pattern, 60 marks for external assessment Semester end exam and 40 marks for internal continuous assessment consisting of a 20 marks class test, 5 marks for active participation in the class & 15 marks- Projects, Presentations etc.

**Agenda 4: To recommend the approved syllabus to Academic Council.**

Members of Board of Studies approved the revised syllabus and question paper pattern and recommended the same to be forwarded to the Academic Council for their approval.

**Agenda 5: To do the verification of the question papers for sem 1, 3 and 5**

Members of Board of Studies verified all the question papers for sem I, III and V and gave the following suggestions:

1. Dr. Mansee Thakur put forward for suggestion to included shorter answers with lesser weightage of marks along with long answers in the questions paper for UG.
2. Dr. Goyal recommended adding numerical problems in the question papers.

3. Dr. Usha Padmanabhan proposed to include problem based questions for post graduate students

**Agenda 6: Any other matter with the permission of Chair**

Members of Board of Studies put forward the idea to take feedback of the syllabus from the alumni. They suggested designing a Google form and to send it to the alumni and later take up their suggestions to make the necessary changes.

The meeting was dissolved with thanks to the Chair and all the Board of Studies Members.