

BIOTECHNOLOGY

Minutes of the 1st BOS Meeting
Held on Friday, 30th August 2019

Following members were present;

1. Mrs. Suparna Deepak	HOD/Chairperson
2. Mrs. Meenakshi Johri	Member
3. Mr. Gopakumar Pillai	Member
4. Mrs. Bindu Rajaguru	Member
5. Dr. Remya Varadarajan	Member
6. Dr. Mansi Thakur	Subject Expert
7. Dr. Thankamani Marar	Subject Expert
8. Dr. Varsha Kelkar Mane	Vice Chancellor Nominee
9. Dr. Usha Padmanabhan	Industry Expert
10. Mr. Abhilash Das	Alumni
11. Dr. Gajanan Wader	Principal
12. Mrs. Deepika Sharma	Vice Principal

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

Agenda 1: To Intimate about Notification Regarding Autonomous Status

The Chairperson welcomed members and presented the following documents awarding Autonomous status to the College

- (a) Report of UGC Expert Committee appointed for evaluation.
- (b) Approval Letter from UGC Dated 2^{4th} June, 2019
- (c) Approval Letter from University Dated 1 July, 2019

Agenda 2: To discuss the Pattern of Revision in 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 Commerce subjects. The Chairperson intimated the members that syllabus has been revised to the extent of 5% to 10% changes. 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 3: Discuss & finalize the Revision in Syllabus of subjects under Department of Commerce

1. Dr. Varsha Mane, the Vice- Chancellor's nominee suggested that based on the weightage of the units of each paper, some topics which are redundant can be removed when new topics are introduced and if the topics are small and not very significant, they need not to be mentioned in the syllabus.

2. In F. Y. B. Sc do not include the term misuse of Biotechnology.
3. Dr. Mansee Thakur, Director, MGM School of Biomedical Sciences, Kamothe, Navi Mumbai, the other university representative suggested to remove IPR and Ethics from F. Y. B. Sc Biotechnology-1 paper as these topics would be taught in detail in the upcoming classes.
4. Dr. Usha Padmanabhabhan, Senior Scientist, Haffkine Institute recommended to keep the third unit of biophysics in S. Y. B. Sc sem-3 as such.
5. It was suggested to remove karyotyping and FISH practicals from F. Y. B. Sc and introduce in S. Y. B. Sc.
6. Dr. Thankamani Marar, Dean, Faculty of Science and Technology, School of Biotechnology, D. Y. Patil University, Navi Mumbai to compare the S. Y. B. Sc syllabus for bioprocess technology and BT-1 paper also to remove the repetitive topics and to introduce new topics.
7. Dr. Varsha Mane was of the opinion that research Methodology can be introduced as an Elective subject and Computer Science can be included in the syllabus to make it interdisciplinary.
8. She also suggested introducing detailed paper on Ecology in the syllabus in the perspective of Competitive Exams.
9. Mr. Abhilash Das, Field Application Specialist- Biopharma, Spinco Biotech Pvt suggested removing Leprosy and introducing the three new drugs that have been recently discovered for Tuberculosis in T. Y. B. Sc sem-5 paper-2.
10. He also suggested removing instrumentation from paper-2 to make it Biomedical paper which will include Virology, Antiviral agents, Antimicrobial agents and Chemotherapy.
11. Paper-3 in T. Y. B. Sc can be restricted as follows:
 - a. UNIT-1: Tools in Genetic Engineering.
 - b. UNIT-2: Vectors.
 - c. UNIT-3: Plant Genetic Engineering.
 - d. UNIT-4: Animal Genetic Engineering.
12. Dr. Thankamani Marar wanted T. Y. B. Sc Marine BT more application based. It was suggested to refer MSC in fish Genetics and BT.
13. Dr. Usha Padmanabhabhan and suggested to introduce cGMP, US Pharmacopeia, Indian Pharmacopeia, current manufacturing guidelines like Merck guidelines, Indian guidelines and WHO guidelines T. Y. B. Sc Biosafety paper.
14. Mr. Abhilash Das said to introduce chemical contaminants like Endotoxin and Protein apart from microbial contamination with industry perspective.

After the discussions, the Board approved the revision/changes in the syllabus of following subjects for SEM I, III & V

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

Sr. No	Name of the Subject	Subject Teacher	Topic Added	Topic Removed	Reason for Replacement/addition	Reference for Added Topic	15 Internal Marks Allocation
Semester I							
1.	Basic Chemistry-1	Kaynath Sayyed	Spiro and bicyclo compounds, Valence bond theory and VSEPR theory, preparation of primary standards and examples	NIL	To make students understand the importance of spiro and bicycle compound and theories of bond formation. Preparation of standards is an important practical technique	Chemistry and Chemical reactivity by John C. Kotz., Concise Inorganic Chemistry .5 th edition (2008), Author: J. D. Lee, John Wiley & Sons, USA.	Assignments on different topics related to the subject but outside the syllabus
2	Basic Chemistry-2	Kaynath Sayyed	Conformation: Conformations of cyclohexane , Complexometric Titrations: Introduction , EDTA titrations, advantages and limitations of EDTA as titrant,	NIL	Students should know the conformation of cyclic molecule and the principle of complexometric titrations.	Principles of Analytical Chemistry by Skoog.	Assignments on different topics related to the subject but outside the syllabus

			construction of titration curve, types of EDTA titrations				
3.	Basic Life Science-I	Ms. Suprita R	The Prokaryotic Cell Cycle, Growth and Enumeration Growth phases, Growth Curve. Arithmetic Growth and Growth Yield. Measurement of Growth. Chemostat and Turbidostat Enumeration of Microorganisms- Direct and Indirect Methods Viruses, Fungi- General characters, Classification	Classification, Types, Morphology (Size, Shape and Arrangement) Cultivation of Bacteria.	Repetition in Basic Life Science- II ,	Prescott, Hurley, Klein- Microbiology, 7th edition, International edition, McGraw Hill.	Assignments on different topics related to the subject but outside the syllabus
4	Basic Life Science-I	Ms. Meenakshi Johri	Fluorescent dyes, Negative staining, Pattern of microbial death, Enriched media, Assay media, Transport media	Growth and Enumeration Growth Phases, Growth Curve. Arithmetic Growth and Growth Yield. Measurement	Repetition in Basic Life Science- II , students should be knowing the principle of fluorescent and negative staining. The knowledge of different	Kathleen Park Talaro & Arthur Talaro - Foundations in Microbiology International edition 2002, McGraw Hill.	Assignments on different topics related to the subject but outside the syllabus

			Uptake of nutrients by microorganisms, Influence of environmental factors on microbial growth- Solutes and Water Activity, pH, Temperature, Oxygen Concentration, Pressure, Radiation	t of Growth. Chemostat and Turbidostat Enumeration of Microorganisms- Direct and Indirect Methods Preservation of Cultures- Principle and Methods. Cryogenic Preservation Advantages and Limitations	affecting the microbial growth will help the students design microbial experiments.		
5	Basic Biotechnology – I : Introduction to Biotechnology	Dr. Remya Varadarajan	Achievement of Biotechnology , Prevention of misuse of Biotechnology , Animal cloning – cloning of sheep by nuclear transfer technology Single Cell Proteins (SCP) – Advantages, microorganisms used as SCP, Nutritional value	NIL	Knowing the achievement of Biotechnology would inspire the students. There should also be aware of the misuse and their prevention. In applications, animal cloning was not included. Students should have an idea about SCP which is industrially relevant.	Advanced Biotechnology – R.C Dubey, Biotechnology – B.D Singh	Assignments on different topics related to the subject but outside the syllabus
6	Biotechnology -II	Ms. Aswathi Gangadhara n	Application of DNA recombinant technology, Visible mutation , Nutritional	NIL	Students should be aware of different applications of recombinant technology,	Molecular Biotechnology- Glick and Pasternan ASM Press, iGenetics: A Molecular	Assignments on different topics related to the subject but outside

			mutation, plant cells.		visible and nutritional requirements were not included. Recombination methods in plants cells is important topic.	Approach, 3rd Edition by Peter J. Russell	the syllabus
7	Foundati on Course I	Gopalkrishn a Pillai	Overview of Growing Social Problems in India, Political issues with other countries.	NIL	The students should be aware of the societal problems and politics in India	Foundation Course I. Michael Vag and Meeta Seta. Manan Prakashan.	Assignment s on different topics related to the subject but outside the syllabus

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Semester III

1.	Biophys ics	Dr. C. K. Prashanth	Radiobiology: Introduction, Classification of radiation – ionizing and non-ionizing, Nuclear structure, Radioactivity, classification of radiations in radiobiology, cell cycle and cell death, irradiation of cells, type of radiation damage, cell survival curves, measurement	Magnetism and Fluid dynamics	Radiobiology is more relevant that magnetism and fluid dynamics more biological perspective.		Study of research papers related to the subject and writing an article.
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			of radiation damage in a tissue, normal and tumour cells, therapeutic ratio, oxygen effect, relative biological effectiveness, dose rate and fractionation, radio protectors and radio sensitizers.				
2.	Applied Chemistry	Kaynath Sayyed	Asymmetric Synthesis, Organic synthesis using water: pericyclic reaction, knoevenagel reaction Organic synthesis using green catalyst: mechanism of ptc reaction, types and advantages	Nil	Students are studying these synthesis which can be important for their research of industry work.	Advance organic chemistry by Reinhard Buchkner	Study of research papers related to the subject and writing an article.
3	Business Economics III	Immunology	Inflammation, Toll-like receptors, Salient features of Antigen-Antibody Interaction	NIL	Inflammation and toll-like receptors are very important topics. Knowing the salient features will help understand the principles of antigen-Antibody interactions better.	Kuby immunology, Judy Owen , Jenni Punt , Sharon Stranford., 7th edition (2012), Freeman and Co., NY	Study of research papers related to the subject and writing an article.

4	Cell Biology and Cytogenetics	Gopakumar Pillai and Bhakti Hirani	Overview of Protein Degradation Pathways, Karyotype and FISH	NIL	Protein degradation is an important phenomenon of the membrane,. Knowledge of FISH techniques is important in cytogenetics.	Alberts B (2016) 'Molecular Biology of the Cell' Garland Science.	Study of research papers related to the subject and writing an article.
5	Molecular Biology	Aswathi Gangadhara n	Structure of tRNA. Proteins: Chemical structure of proteins, Molecular structure of proteins, Operons, regulatory proteins.	NIL	Knowing the structure and chemical properties is important to understand the function better.	iGenetics: A Molecular Approach, 3rd Edition by Peter J. Russell	Study of research papers related to the subject and writing an article.
6	Bioprocess Technology	Jyoti Kadam	Strain development, Overview of Amylase production, Mutagen: Ames test	NIL	Industry relevant topics	Industrial Microbiology- A. H. Patel	Study of research papers related to the subject and writing an article.
7	Research Methodology	Gopalkrishna Pillai	Understanding the language of research – Concept, Construct, Definition, Variable. Research Process Qualitative research – Quantitative research – Concept of measurement, Methods to search required	NIL	Important aspects to improve research	Research Methods for the Biosciences. Holmes, Moody & Dine. Oxford University Press.	Study of research papers related to the subject and writing an article.

			information effectively, Reference Management Software, Plagiarism				
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Semester V

1.	Cell Biology	Gopakumar Pillai, Dr. Remya Varadarajan, Suparna Deepak	The role of calcium and NO as intracellular messengers. Overview of assisted reproductive technology. Radiotherapy and Immunotherapy	Nil	Knowledge of pathways for NO and Calcium is important to understand other processes. The application of reproductive biology research not included. Radiotherapy and immunotherapy are also important therapies for cancer which students have an idea about.	The Cell: A Molecular Approach, 6th edition (2013), Geoffrey M. Cooper, Robert E. Hausman, Sinauer Associates, Inc. USA. Cell and Molecular Biology- Concepts and Experiments—Karp – Wiley International	Solving practical problems related to the subject using different techniques
2.	Medical Biotechnology	Ms. Meenakshi Johri, Ms. Jyoti Kadam, Dr. Remya Varadarajan, Ms. Bhakti	Viruses and Cancer, Antituberculous agents: isoniazid, Ethambutol, Pyrazinamide; Mycobacterial resistance; Treatment of leprosy, Lincosamide-clindamycin, Surface plasmon resonance,	NIL	All are important relevant topics	Understanding Viruses by Teri Shors. Biophysical Chemistry, Principles and Techniques (2007), Avinash Upadhyay and Kakoli Upadhyay, 4 th Edition,	Solving practical problems related to the subject using different techniques

		Hirani	Chromatography			Himalaya Publishing House.	
3	Recombinant DNA Technology and Genomics	Suparna Deepak and Dr. Navami Dayal	Chemical Methods for genes to plants :Calcium phosphate, DEAE dextran, Transgenic Livestock: Production of Pharmaceuticals and improving milk quality;pBR322, BAC vectors, Next generation Sequencing,	NIL	Chemical methods have not been included in gene transfer, Important applications of transgenic animals, The recent advance in sequencing methods included.	Molecular Biotechnology- Principles and Applications of Recombinant DNA Technology 3rd Edition Glick B.R., Pasternak J.J., Patten C.L.	Solving practical problems related to the subject using different techniques
4	Marine Biotechnology	Meenakshi Johri , Bindu Rajaguru	Applications of Marine Biotechnology, Marine Natural Products and Clinical Trials, Nutraceutical Market Trends and Quality Control, Future trends in Marine Pharmaceuticals	NIL	Industry relevant topics are included	Springer handbook of marine Biotechnology	Solving practical problems related to the subject using different techniques
5	Biosafety	Ms. Jyoti Kadam, Dr. Remya Varadarajan and Ms. Suprita Rohit	Biosafety level 1, 2, 3 & 4, Biological safety cabinets, out of specification results and its validation, open field tests of GMO,controversy about GMO, development of a policy for somatic cell gene therapy, human germ line gene therapy, human cloning-an asset or liability.	NIL	Important aspects of Biosafety included. Controversies and case studies involving GMOs included.	Molecular Biotechnology – Principles and Applications of Recombinant DNA Glick,B.R, Pasternak, J.J Patten, C.L 3rd edition ASM press	Solving practical problems related to the subject using different techniques

Agenda 4: To discuss & finalize the Question Paper Pattern

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 5: To approve and recommend changed 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 6: Any other matter with the permission of the chair

The BOS members gave the suggestion that elective subjects should be introduced at the B. Sc level so as to mould the students for both Research and Industry as per their interest.

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