

Vivekanand Education Society's College of Arts, Science & Commerce (Autonomous)

Minutes of the Fifth BOS meeting in the subject of Microbiology

Date : 26th Feb. 2024

Time : 2.15 pm to 4.15 pm

Mode: Blended (Online for BOS external members and Offline for BOS in-house staff members)

Google Meeting Link and ID: meet.google.com/srr-xdpb-ywr

Agenda for the Meeting:

1. Welcome to all the BOS members.
2. To discuss the Syllabus and Scheme of Evaluation of the following courses
 - a. S.Y.B.Sc. Microbiology course under NEP for the academic year 2024-25
 - b. M.Sc. (Part - II) Microbiology course under NEP for the academic year 2024-25
 - c. TYBSc Microbiology course (non-NEP) under Autonomy for the academic year 2024-25
3. To discuss the basic structure/ outline of the TYBSc Microbiology course under NEP for the academic year 2025-26
4. Any other matter with the permission of the chair

Members:

1. Prof.(Dr) Santhini S. Nair (**Chairperson & HOD**)
2. Dr. Dona J. Joseph. Dr. Malay Shah, Dr. (Mrs.) Shweta A. Patil, Mr. Suman P. Ganger, Dr. Mugdha Apte, Dr. Pradnya Gogte, Dr. Sumana Sanigrahi and Ms. Malavika Pillai (**Members, Faculty at the Department of Microbiology, VESASC**)
3. Dr. Girish Mahajan (**External Subject Expert Member- Industry Representative**)
4. Dr. Lolly Jain (**University Nominee**)
5. Dr. Debjani Dasgupta (**External Subject Expert Member**)
6. Dr. Purvi Bhatt (**External Subject Expert Member**)
7. Dr. Subhojit Sen (**PG Alumnus**)

All the above members were present for the meeting in online or offline mode as mentioned above.

Agenda 1: Welcome to the members and briefing the agenda

Prof. Santhini S. Nair welcomed all the members to the **fifth BOS** meeting in Microbiology. She introduced the 2 newly added members, Dr. Sumana Sanigrahi and Ms. Malavika Pillai who

joined the department in August 2023. She further briefed the external members about the contents of the NEP 2020 structure for the First Year Undergraduate Program as a reminder for continuity as passed in the fourth BOS meeting. She notified the members that as per the college policy decision taken after the fourth meeting, the Skill enhancement courses (SEC) proposed to be taught at the department level-[Sterilization and Disinfection -for Sem I and Public Health Microbiology for Sem II as SEC courses] would no longer be taught by the department. Therefore the contents of SEC for Sem I was suitably adjusted in the practical component of Sem I syllabus. The modified FY NEP syllabus would be mailed to all BOS members along with the minutes of this meeting. In continuation, Prof. Santhini S. Nair stated that under NEP 2020, the following syllabi being offered **by the department** would only be presented for review and discussion in this meeting, which includes :

1. UG Semester III for Major courses (for Microbiology students)
2. Minor courses being offered by the department for other science students
3. Open Electives(OE) course by the department for Sem III/IV (for Arts students)
4. MSc Part II Sem III syllabus .

She reiterated that the other common courses[AEC/VEC/SEC] being offered to the UG students in Second year of the NEP would be decided and passed at the college level.

Agenda 2: Finalize the Syllabus and Scheme of Evaluation of:

- A. S.Y.B.Sc. Microbiology course under NEP for the academic year 2024-25
- B. M.Sc. (Part - II) Microbiology course under NEP for the academic year 2024-25
- C. TYBSc Microbiology course (non-NEP) under Autonomy for the academic year 2024-25

- A. S.Y.B.Sc. Microbiology course under NEP for the academic year 2024-25

SEMESTER 3 UG IN MICROBIOLOGY AS PER NEP 2020

1. Microbiology Major paper (Theory and Practicals)

Major Microbiology

Draft syllabus for **Microbiology Major Paper 1 (Biochemistry)** which consisted of units on Introduction to Biochemistry and Enzymology was explained by Dr. Shweta Patil. She mentioned that in FY Sem I and II, the students have been introduced to biomolecules and in the

Sem III, metabolism and biochemical pathways with details of EMP pathway with structures and enzymes is added. This will prepare them for the third year Biochemistry paper.

Microbiology Major Paper 2: Environmental microbiology- Microbial evolution and ecology, Role of microorganisms in sustainable development) was discussed by Dr. Dona Joseph. She explained the importance of these topics of Ecology and Nutrient Cycling. In this paper the students will also be introduced to culture independent and dependent methods.

She further explained that **Microbiology practicals** for Sem 3 will include experiments based on the Major theory papers as well as the VSC course.

2. Vocational Skill Course (VSC)

VSC was discussed by Dr. Malay Shah. According to the guidelines the VSC course should include hands-on Training corresponding to the Major and/or Minor Subject. He explained that the department has decided to introduce **Bioanalytical techniques** as the VSC course with 2 credits (Theory). The intention is to make the students aware of basic tools and techniques like Colorimeter, Chromatography, Electrophoresis, etc. The experiments that cannot be performed in the lab will be explained using videos and virtual labs. Dr. Lolly Jain expressed the concern that offering a theory course may not serve the purpose of a Vocational skill course. Dr. Santhini Nair assured that the practical aspects will be demonstrated to the students for all the techniques simultaneously along with the theoretical explanation. She also added that the Major practicals will include few of the VSC practicals wherein the students would get hands-on experiential learning..

3. Courses offered by the department for other science department students

i) MINOR COURSE (For non-Microbiology Science students)

The Minor course is offered to non-Microbiology science students (Chemistry, Physics and Math). **Basic Techniques in Microbiology** will be offered as the Minor course (Theory and Practical). The syllabus was discussed by Dr. Shweta Patil, who stressed on the importance of basic Microbiology in the industries like Pharmaceutical and Food where Science students are likely to be employed. Dr. Lolly Jain expressed that the syllabus can be reduced a little for ease of teaching. Dr. Sen suggested that the Ames test can be included in Minor practicals in the future. These suggestions were taken note of and would be deliberated by the faculty members if possible.

ii) OE (Open Elective) (For Arts/ Science students)

Mr. Suman Ganger explained that OE will be offered as two baskets by the Arts and Science departments. This course will be offered in Semesters 3 and 4. The Microbiology department will be offering **Microbes and Human health** in continuation with Microbes and food offered in

the Sem 1 and 2 as the open elective course. Prof.Santhini S Nair explained the paper will cover microbiological aspects of human disease with topics like common and communicable diseases, normal flora, Human Microbiome, reading of medical reports etc. Mr. Suman discussed the list of lab activities that will be carried out to keep the students interested in the subject.

B. M.Sc. (Part - II) Microbiology course under NEP for the academic year 2024-25

SEMESTER 3 M.Sc. (Part - II) MICROBIOLOGY COURSE UNDER NEP for the academic year 2024-25

Dr. Pradnya Gogte briefed the external members about the semester-wise paper distribution as per NEP structure. A small change about the interchanging of major mandatory practicals for 2 credits (**Bioinformatics and Introduction to Techniques of Animal and Plant Tissue Culture**) of Semesters 1 and 2 was proposed. This shift was approved by BOS. Another change proposed in Semesters 1 and 2 was the offering of 3 elective papers for Semesters 1 and 2 out of which the students will choose one in Semester 1 and one of the remaining two in Semester 2. Two of the elective papers (**BIOPROCESS TECHNOLOGY, IPR, AND BIOENTREPRENEURSHIP and ADVANCED BIOANALYTICAL TECHNIQUES**) were formulated by merging the pre-approved elective papers and a new paper (**MICROBIAL DIVERSITY: FUNDAMENTALS AND APPLICATIONS**) was introduced. This new paper was discussed after the Semester 3 syllabus discussion with the permission of BOS. Dr. Lolly Jain pointed out that this was a good project-oriented elective paper that would help the students in choosing their research project topics.

Further, Dr. Pradnya discussed the Semester 3 syllabus. She mentioned that in Semester 3 students will undertake a **research project for 4 credits**. This would be a group dissertation with 3-4 members in a group and will be carried out in the college. In semester 4 students will have a 6-credit research project component for which they will be encouraged to join a research institute, research laboratory, or industry and carry out their research in the form of an external project. Details regarding this external project will be discussed in the next BOS meeting.

Dr. Pradnya then discussed the **Major Mandatory Paper 1 (TECHNIQUES IN MOLECULAR MICROBIOLOGY)**. As per Dr. Subhojit Sen's suggestion, a change was made in the syllabus to include 2D PAGE instead of PAGE in the topic separation of proteins. Dr. Girish Mahajan suggested including the term identification of proteins along with the title separation of proteins, as Mass Spectroscopy is used for identification and not separation. The suggestion was accepted and the change was made accordingly. Dr. Mahajan also suggested that VITEK and API terminology be changed as these are brand names. This suggestion was accepted and the terms were changed to include the method name. Dr. Subhojit Sen asked for clarification regarding molecular clocks and divergent types. Dr. Mugdha Apte clarified that periodic changes concerning molecular evolution would be covered in the same. She mentioned that the topic has been included as a part of Microbial Taxonomy, a topic that will not be covered

in UG. Dr. Santhini Nair pointed out that many topics that were included in the earlier UG syllabi had to be omitted due to the constraints of the NEP structure.

Dr. Mugdha Apte discussed **Major Mandatory Paper 2 (APPLIED IMMUNOLOGY)**. She mentioned that the paper is retained as is from the earlier approved syllabus. Dr. Santhini Nair suggested checking the TY NEP syllabus to ensure that the basics of Immunology are covered before the students study this paper.

Dr. Subhojit Sen pointed out that non-credit remedial courses should be offered to bridge the gap between the UG and PG syllabi. This is specifically for the students from other colleges joining our college directly at the Master's level (Semester 7).

Dr. Pradnya Gogte discussed the **Major Mandatory Practical (4 and 2 credits) syllabus**. Dr. Purvi Bhatt suggested reordering the practicals as per workflow order. This suggestion was accepted and changes were made accordingly. Dr. Subhojit Sen suggested the inclusion of rapid diagnostic kits like pregnancy tests and Mylabs Covid test kits which are relevant to the Immunology practicals.

Major Elective papers to be offered in Semesters 3 and 4 were discussed. The first elective paper **PUBLIC HEALTH MICROBIOLOGY AND CLINICAL RESEARCH** was discussed by Dr. Pradnya. Dr. Subhojit Sen enquired whether World regulatory bodies along with Indian systems should be included. Dr. Mugdha Apte assured and showed the inclusion of ICH, USFDA, and TGA.

The BOS members commented that the second elective option **CELL BIOLOGY AND GENETICS OF EUKARYOTES** discussed by Ms. Malavika was too vast and it was decided that the paper would be split up into two papers. Thus four elective papers would be offered in Semesters 3 and 4. The syllabus for individual CELL BIOLOGY and GENETICS OF EUKARYOTES papers would be the same as the pre-approved syllabus as the CELL BIOLOGY AND GENETICS OF EUKARYOTES was composed by merging these individual papers.

Dr. Pradnya discussed the third elective paper **ADVANCES IN BIOTECHNOLOGY**. She pointed out that the first two units were the same as in the earlier approved syllabus. The nanotechnology unit was added to this paper from another paper. The fourth unit was created by combining one unit each of Biosafety and Bioethics from the earlier syllabus.

At the end of MSc syllabus discussion, Dr. Mugdha Apte mentioned that in the future NEP MSc (Part 1) syllabus will need modification based on the NEP syllabus framework for the undergraduate programme as this will also be the syllabus for the 4th year Undergraduate programme (BSc Honors).

C. TYBSC MICROBIOLOGY COURSE (NON-NEP) UNDER AUTONOMY FOR THE ACADEMIC YEAR 2024-25

Dr. Dona gave an overview of the autonomous syllabus. She further discussed **Paper 1 (Molecular Genetics)**. From Paper 1, the topic on rDNA technology is shifted to the Applied component which was approved by the BOS. The Paper 2 (Medical Microbiology and Immunology : Part I) was discussed by Dr. Nair and she mentioned that there are no changes with the syllabus. Dr. Shweta Patil discussed **Paper 3 (Fundamentals of Prokaryotic Biochemistry)** and mentioned that we have retained the University syllabus. Dr. Malay Shah read the syllabus for **Paper 4 (Bioprocess Technology I)** and mentioned that the university syllabus was retained but structured systematically. With respect to Practicals for Semester 6, permission was taken to replace Cole's Ferricyanide method for sugar estimation with Refractometer. The BOS members agreed to this change considering that Cole's method has become obsolete. The TY Autonomy practicals were also systematically organized. Mr. Suman Ganger discussed **Paper 5 (Applied component - Introduction to Biotechnology)**. This paper has been changed completely to make the students acquainted with Molecular biology and Biotechnology. The external members suggested that papers having the same name suffixed by "I" and "II" be named differently so that the students would not face difficulties when applying in foreign universities (some foreign universities consider such papers as a single paper with 2 parts). This suggestion would be suitably implemented after giving proper titles to the papers.

Agenda 3: Basic structure/ outline of the TYBSc Microbiology course under NEP for the academic year 2025-26

With the permission of the chair, it was decided that the TY NEP framework would be mailed to all the members before the next BOS meeting for review as there was paucity of time for elaborate discussion in the meeting.

Agenda 4: Any other matter with the permission of the chair

No other major queries were raised and the syllabus discussed was approved by all the members. Dr. Santhini Nair informed the members that the tenure of this BOS is for three years and the next meeting would be the final meeting with the present members of the BOS. She thanked all the members for their contribution and announced that she would be superannuating in April 2024. The meeting ended on a positive note with the chairperson thanking all the members for their valuable inputs and suggestions.



Prof.(Dr) Santhini S. Nair
Chairperson & HOD

meet.google.com/srr-xdpb-ywr

Dr. Subhojit Sen

microdept vesasc

Purvi Bhatt

Malay Shah

Dr. Debjani Dasgupta

Pradnya Gogte

2:22 PM | Online BOS meeting invite -VESASC Mi...

meet.google.com/srr-xdpb-ywr

Dr. Subhojit Sen

microdept vesasc

Purvi Bhatt

Malay Shah

Dr. Debjani Dasgupta

LOLLY JAIN

Pradnya Gogte

2:22 PM | Online BOS meeting invite -VESASC Mi...

meet.google.com/srr-xdpb-ywr

microdept vesasc (Presenting)

4. MSc NEP SYLLABUS 2024-25 onwards Sem 3

12. Apply rapid diagnostic techniques for immunological disorder detection.

Practicals

1. Perform DNA extraction of the given bacterial culture and perform PCR amplification of the isolated DNA using universal 16S rRNA gene primers.
2. Restriction digestion of DNA & Restriction mapping
3. Agarose gel electrophoresis
4. Protein electrophoresis (PAGE)- Disruption of bacterial cells followed by characterization of cellular proteins by SDS-PAGE
5. Western blotting [Demonstration]
6. Primer designing
7. Metagenomics - Extraction of DNA from soil and checking its purity using agarose electrophoresis and UV 260/280 ratio
8. Hemoglobin estimation by Cyanmethaemoglobin method using Drabkin's Fluid

microdept vesasc

Dr. Subhojit Sen

Purvi Bhatt

Dr. Debjani Dasgupta

Girish Mahajan

LOLLY JAIN

Malay Shah

LOLLY JAIN

Pradnya Gogte

3:33 PM | Online BOS meeting invite -VESASC M...

Type here to search

15:33 26-02-2024