## Department of Biotechnology
## Board of Studies Meeting
## Academic Year: 2025-26 (Even Semester)

The minutes of the 20th meeting of Board of Studies held on 11.11.2025 at 10.00 am at the B1 Block- Room No. 1213. (Department of Biotechnology - Instrumentation Room)

**Members Present:**

| S. No. | Name | Category |
|---|---|---|
| 1 | Dr. P. Chidambara Rajan | Chairman |
| 2 | Dr. Senthil Kumar, Associate Professor, Department of Biotechnology, Hindusthan College of Arts and Science, Coimbatore | VC Nominee |
| 3 | Dr. G. Suresha, Senior Scientist, ICAR-Sugarcane Breeding Institute, Coimbatore | Subject Expert |
| 4 | Dr. D. Natarajan, Professor, Department of Biotechnology, Periyar University, Salem | Subject Expert |
| 5 | Dr. Ranjith Kumar Rajamani | Industrial Expert |
| 6 | Prof. Mrs.K. Ramya, Assistant Professor, Department of Biotechnology, CMS College of Science and Commerce, Coimbatore | Alumni Member |
| 7 | Dr. R. Suganthi | Member |
| 8 | Dr. K. Kalimuthu | Member |
| 9 | Dr. K. Arungandhi | Member |
| 10 | Dr. Arun P | Member |
| 11 | Dr. M.N. Kathiravan | Member |
| 12 | Dr. M. Shanmugavadivu | Member |
| 13 | Dr. M. Poongothai | Member |
| 14 | Dr. Radha Palaniswamy | Member |
| 15 | Dr. S. Saranya | Member |
| 16 | Mrs. C.R. Aarthi | Member |
| 17 | Dr. N. Kuppuchami | Co-opted Member |
| 18 | Dr. A. Hazel Verbina | Co-opted Member |
| 19 | Dr. Ravi Kumar | Co-opted Member |
| 20 | Dr. K. Girija | Co-opted Member |
| 21 | Dr. Sowrirajan | Co-opted Member |
| 22 | Dr.S. Uma | Co-opted Member |
| 23 | Ms. Prisha | Student Representative- PG |
| 24 | Ms. Paveela | Student Representative- UG |

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

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

**Item 20.1:** *To review and approve the minutes of the previous meeting held on* ***28-06-2025.***

The chairman of the Board presented the minutes of the previous meeting held on ***28-06-2025*** 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 *28-06-2025.***

**Item 20.2:** *To consider and approve the syllabi for II semester for UG and PG students admitted during the academic year 2025-2026.*

The chairman presented the detailed scheme and Regulation for the students admitted from the academic year 2024-25 for the II semester. The members deliberated in detail about the modification required.

After brief discussion the following resolution was passed.

**Resolution:**

**Resolved to adopt and resolved to retain the existing syllabus for the courses for UG and PG students admitted for the academic year 2025-26.**

**Item 20.3:** *To consider and approve the syllabi for IV semester for the students admitted in UG and PG during the academic year 2024-2025.*

The chairman presented the detailed scheme and Regulation for the students admitted in UG and PG from the academic year 2024-2025 and syllabi for the IV semester. The members deliberated in detail about the modification required.

After discussion it is unanimously decided to adopt the following changes.

**Resolution:**

**Resolved to adopt and resolved to retain the existing syllabus for the courses for UG and PG students admitted for the academic year 2024-25**

**Item 20.4:** *To consider and approve the syllabi for VI semester for the students admitted in UG during the academic year 2023-2024.*

The chairman presented the detailed scheme and Regulation for the students admitted

The chairman presented the detailed scheme and Regulation for the students admitted in UG from the academic year 2023-2024 and syllabus for the VI semester. The members deliberated in detail about the modification required.

**Changes Made:**

| Course Code | Course | Reason |
|---|---|---|
| **233BT1A6CA** | **Genomics and Proteomics** | Dr. Suresha and Dr. Natarajan suggested to include **Unit III: "Deep Learning for Mass Spectrometry Data Analysis."** **Unit V: "AI for Biomarker Discovery in Clinical Proteomics."** |
| **233BT1A6CB** | **Bionanotechnology** | Dr. Senthil Kumar and Dr. Ranjith Kumar suggested to include **Unit III: "IKS-Based Biomaterials for Tissue Engineering."** **Unit V: "Role of AI in Bionanotechnology."** |
| **233BT1A6DC** | **DSE: Synthetic Biology** | Dr. Ranjith Kumar suggested to include **Unit V: "Role of AI/ML in synthetic Biology."** |
| **233BT1A6DD** | **DSE: Biomarker Technology** | Dr. Natarajan suggested to include **Unit V: "AI in Biomarker Discovery for Rare Diseases."** |

After discussion it is unanimously decided to adopt the following changes.

**Resolution:**

**Resolved to approve the above modification and adopt the revised syllabus for students admitted for the academic year 2023-24.**

**Item 20.5:** *To consider and approve the syllabi of Self study paper offered in III semester for the students admitted during 2025-26.*

The chairman presented the detailed scheme and Self study syllabi for the students admitted in UG and PG from the academic year 2025-2026. The members deliberated in detail about the modification required.

After discussion the following resolution was passed.

**Resolution:**

**Resolved to give Mushroom Farming instead of Environmental Management for UG and Herbal Technology instead of Development Biology for PG students.**

**Item 20.6:** To *consider and approve the criteria for awarding extra credits to UG and PG students admitted during the academic year 2025–26.*

The chairman presented the criteria for awarding extra credits to UG and PG students admitted during the academic year 2025-26.

After discussion the following resolution was passed.

**Resolution:**

**Resolved to include one credit for National level or International Hackathon Idea presentation and also give separate credit for oral paper or poster presentation**

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. M. Shanmugavadivu, Biotechnology Department CCD coordinator.

11.11.25

**(Dr. P. Chidambara Rajan)**

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

**Date: 11.11.2025**

## ATTENDANCE OF THE EIGHTEENTH BOARD OF STUDIES MEETING

**Faculty: Biosciences** **Board: Biotechnology**

Date : 11/11/2025
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 | Attendance Status |
|---|---|---|---|
| 1. | Dr. P. Chidambara Rajan<br>Professor and Head | Chairman | PRESENT |
| 2. | Dr. P. Senthil Kumar, Associate Professor, Department of Biotechnology, Hindusthan College of Arts and Science, Coimbatore | University Nominee | PRESENT |
| 3. | Dr. D. Natarajan, Associate Professor, Department of Biotechnology, Periyar University, Salem. | Subject Expert | PRESENT |
| 4. | Dr. G. S. Suresha, Senior Scientist, ICAR-Sugarcane Breeding Institute, Coimbatore | Subject Expert | PRESENT |
| 5. | Dr. Ranjith Kumar Rajamani,<br>Chief Scientific Officer, Fine Ants Innov Tekhouse, Thudiyalur, Coimbatore | Industrial expert | PRESENT |
| 6. | Prof. Mrs.K. Ramya, Assistant Professor, Department of Biotechnology, CMS College of Science and Commerce, Coimbatore | Alumni | PRESENT |
| 7. | Ms. K.S. Prisha Shri<br>(II M.Sc. Biotechnology) | Student Representatives | PRESENT |
| | Ms. M. Paveela<br>(III B.Sc. Biotechnology) | | PRESENT |
| 8. | Part I (Language I)<br>Dr. N. Kuppuchamy<br>Associate Professor and Head<br>Department of Tamil | Co-opted member | PRESENT |
| 9. | Part II (Language II)<br>Dr. A. Hazel Verbina<br>Professor and Head<br>Department of English | Co-opted member | PRESENT |
| 10. | Allied - IDC- Chemistry<br>Dr. R. Ravikumar<br>Associate Professor and Head (i/c)<br>Department of Chemistry | Co-opted member | PRESENT |
| 11. | Allied - IDC- Biophysics<br>Dr. K. Girija<br>Associate Professor and Head (i/c)<br>Department of Physics | Co-opted member | PRESENT |
| 12 | Allied -IDC- Mathematics | Co-opted member | |

| | | | |
|---|---|---|---|
| | Dr. R. Sowrirajan<br>Assistant Professor and Head<br>Department of Mathematics | | PRESENT |
| 13 | Allied-IDC- Computer Science<br>Dr. S. Uma<br>Professor and Head (i/c)<br>Department of Computer Science | Co-opted member | PRESENT |
| 11. | Dr. K. Kalimuthu<br>Professor | Internal Member | PRESENT |
| 12. | Dr. R. Suganthi<br>Professor | Internal Member | PRESENT |
| 13. | Dr. K. Arungandhi<br>Professor | Internal Member | PRESENT |
| 14. | Dr. Arun. P<br>Professor | Internal Member | PRESENT |
| 15. | Dr. M.N. Kathiravan<br>Professor | Internal Member | PRESENT |
| 16. | Dr. M. Shanmugavadivu<br>Associate Professor | Internal Member | PRESENT |
| 17. | Dr. M. Poongothai<br>Associate Professor | Internal Member | PRESENT |
| 19. | Dr. Radha Palaniswamy<br>Assistant Professor | Internal Member | PRESENT |
| 19. | Dr. S. Saranya<br>Assistant Professor | Internal Member | PRESENT |
| 20. | Mrs. C.R. Aarthi<br>Assistant Professor | Internal Member | PRESENT |

**Date: 11.11.2025**

11.11.25

**(Dr. P. Chidambara Rajan)**
BoS Chairman/HoD
Department of Biotechnology
Dr. N. G. P. Arts and Science College
Coimbatore – 641 048

**Department of Biotechnology**
**B.Sc. Biotechnology**
**Syllabus Revision**

**Faculty: Biosciences** **Board: Biotechnology**
**Semester: VI**
**Course Code/Name: 233BT1A6CA** **Core: Genomics and Proteomics**

| Unit | Existing | Revised |
|---|---|---|
| I | Access and retrieving genome project information from web - Comparative genomics. Identification and classification of genome using molecular markers, 16S rRNA typing/sequencing, Fragment Assembly and Expressed Sequence Tag (EST). Whole Genome sequencing - Sanger and Gilbert method - Next Generation Sequencing - Gene predictions. Gene Expression profiling. GENSCAN. Genomic and cDNA libraries. Metagenomics | |
| II | Oligonucleotide design, Data collection, Image processing, Data transformation and normalization, Statistical analysis to identify differentially expressed genes and Microarray data classification. Comparison of SAGE and DNA Microarrays. Transcriptomics | |
| III | Protein databases - UniProt, RCSB, InterPro, PDB. Database of Protein family trees - SMOS.2, LenVarDB, 3PFDB, SUPFAM, MegaMotifbase, DSDBASE, Peptide Sequencing - Mass spectrometry - Fundamentals, Ionization sources, Mass analyzers, MALDI sample preparation and analysis. Hybrid mass spectrometry configurations, in-gel & in-solution digestion. | Deep Learning for Mass Spectrometry Data Analysis |
| IV | Introduction to quantitative proteomics - Relative and Absolute Quantification, Label Free Quantification -Spectral Counting. Gel based quantitative proteomics – Fluorescence 2-D Difference Gel Electrophoresis (FDIGE) and Labelled Quantification - In vivo labeling (SILAC & TAILS) and In vitro labeling (iTRAQ & TMT). Peptide Mapping and Peptide Fingerprinting | |
| V | Functional Proteomics, Interaction proteomics - Biochemical approaches: Direct analysis, affinity purification and protein chips. Applications of proteomics in OMICS and its translational research (Metabolomics, Metabonomics and Neutriproteomics). Challenges in Proteomics. | AI for Biomarker Discovery in Clinical Proteomics |

**PERCENTAGE OF SYLLABUS REVISION: 4.4%**

**COURSE FOCUS ON :**

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

**Department of Biotechnology**
**B.Sc. Biotechnology**
**Syllabus Revision**

**Faculty: Biosciences** **Board: Biotechnology**
**Semester: VI**
**Course Code/Name: 233BT1A6CB** **Core: Bionanotechnology**

| Unit | Existing | Revised |
|---|---|---|
| I | Key features of Nano-size, size determination – XRD and Particle size analyzer. Comparison of particle behavior at nanosize to macrosize. Strategies for Nanoarchitecture (top down & bottom up approaches). Introduction to Nanobiotechnology – Biogenic nanoparticle synthesis from plants, bacteria and yeast. Biomolecular design. | |
| II | Structural principles of Bionanotechnology: Natural Bionanomachinery – (Eg: Lotus leaf effect, Gecko lizard, fish hair structures, butterfly wings). Overview of Nanodevices - Strategies for construction of Nanodevices using Carbon as a raw material. Protein folding Aspects: Stable structure, Globular proteins, Role of chaperones in folding, lipid bilayer, DNA based nanostructures. | |
| III | Principles of Functional Bionanotechnology. Information-driven nanoassembly: Energetics; Biomaterials- Filaments and fibrils, Minerals combined with biomaterials for specific applications. Biomolecular sensing taste and light sensors. Machine phase Bionanotechnology- Muscle sarcomeres and nerves | IKS-Based Biomaterials for Tissue Engineering |
| IV | Differentiation of Nanoparticles and Nanosystems. Conventional drug delivery & targeted drug delivery – its role and advantages; Clinical Trials involved in Bionanotechnology. | |
| V | Principles, types and applications of Bionano-imaging, Magnetic nano-particles, nano-biosensors, biochips, biorobotics, nanopore technology and nanoarrays in medicine, agriculture, food and environmental science. Opportunities and challenges of Nanotechnology. | Role of AI in Bionanotechnology |

**PERCENTAGE OF SYLLABUS REVISION: 4.34%**

**COURSE FOCUS ON :**

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

**Department of Biotechnology**
**B.Sc. Biotechnology**
**Syllabus Revision**

**Faculty: Biosciences** **Board: Biotechnology**
**Semester: VI**
**Course Code/Name: 233BT1A6DC** **DSE: Synthetic Biology**

| Unit | Existing | Revised |
|---|---|---|
| I | Information Storage in Biology – DNA Structure, DNA Replication, and PCR. Information flow in Biology – Genetic code and Proteins. Controlling the flow of Information in Biology – Transcriptional Control, Translational control and, RNA regulation. | |
| II | Systematic Design, Synthetic biology design cycle and its role in systematic design. The registry and part characterization. Information system – The SynBIS system and BioCAD concept. Modelling, Norbert Weiner, Signal Theory- analysis of periodic signals, Time and frequency domains, Systems and Control Theory. Block Diagram, Laplace transform method. | |
| III | Enabling Technologies- Genome sequences, Open Online databases, DNA Sequencing, DNA Synthesis and System Biology. Foundations -Standard DNA Assembly, Standard Measurement, Modelling, Parts registries and Upcoming Technologies. | |
| IV | Minimal Cells – Natural Minimal Cells, Genome Reduction, Synthetic Life, Genome Synthesis and Designer Cells. Origins of Life in nature and in the lab – The RNA world, Chemical replicating systems, Parts, Devices and Systems – Parts - Promoter, Operator, Ribosome Binding site, Protein coding sequence and Terminators. Simple systems – Feedback Loops, Switches, Oscillators, Edge detector and Counters. Turning Secondary Structure of mRNA in and around parts - RBS matching and Insulators. | |
| V | Potential for development, Criteria for development, Challenges in developing applications, Constructing Microbial cell factories, Protein products, Fuels, Commodity chemicals, Materials, Specialty chemicals and drugs. Medical and Health applications, Biosensors, Smart therapeutics, Tissue engineering and patterning. Synthetic Biology for a Sustainable world – Bioremediation, Biomining, Engineering crops and commensal soil organisms. Societal Impact of synthetic Biology – Public Health and Environmental Risks, Biosecurity and Biohacking, Public value and new global inequality. | Role of AI/ML in synthetic Biology |

**PERCENTAGE OF SYLLABUS REVISION: 1.9%**

**COURSE FOCUS ON :**

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

**Department of Biotechnology**
**B.Sc. Biotechnology**
**Syllabus Revision**

**Faculty: Biosciences** **Board: Biotechnology**
**Semester: VI**
**Course Code/Name: 233BT1A6DD** **DSE: Biomarker Technology**

| Unit | Existing | Revised |
|---|---|---|
| I | Introduction - history - milestones - biomarkers. Types of biomarkers in the biological sciences. Genomics - Proteomics - Transcriptomics – Metabolomics relating to biomarkers. | |
| II | Analysis of proteins - Analysis of transcripts - study of RNA profiling - identification of genomic DNA - comprehension of metabolites and intermediary products. | |
| III | Biomarker Databases - MarkerDB -clinical and therapeutic decision making - gobiomdbplus (comprehensive database) - Charles River database. | |
| IV | Screening markers - toxicity markers - efficacy markers - drug development using biomarkers - disease management with examples. | |
| V | Prediction of diseases - diagnostics uses - prognostic applications - staging markers - safety biomarker - susceptibility biomarker - case studies relating to different types of biomarkers in diseases | AI in Biomarker Discovery for Rare Diseases. |

**PERCENTAGE OF SYLLABUS REVISION: 5.14%**

**COURSE FOCUS ON :**

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