

Annexure – IV



DEPARTMENT OF BIOINFORMATICS

CIRCULAR

Date: 17.04.2025

Department of Bioinformatics is going to conduct Board of Studies (BoS) meeting for the B.Tech., Bioinformatics programme on 17.04.2025 from 10.00 AM to 1.00 PM in ASF 12, 2nd floor, U Block VFSTR and also with the following Google meet link: <https://meet.google.com/ktv-anpa-sry>. All the members are requested to make it convenient to attend the meeting.

The members are

S.No.	Name and Designation of the Member	Position
1.	Dr. A.Ranganadha Reddy Professor and HoD, Dept. of Bioinformatics, VFSTR	Chairperson
2.	Prof. V. Venkata Dasu Professor, Department of Biosciences and Bioengineering, Indian Institute of Technology Guwahati (IITG)	External Member (Academic)
3.	Prof. Prithish Kumar Varadwaj Professor, Department of Applied Sciences, IIIT Allahabad	External Member (Academic)
4.	Dr. P. Madhu Babu Sr. Scientist., Omics NextGen Laboratories., Bhimavaram	Invited Member (Industry)
5.	Prof. Vijaya Ramu Dirisala Professor, Dept. of Biotechnology, VFSTR	Member
6.	Prof. S. Asha Professor, Dept. of Biotechnology, VFSTR	Member
7.	Dr. Abraham Peele Karlapudi Assoc. Professor, Dept. of Biotechnology, VFSTR	Dean, R & D Nominee
8.	Dr. Md. Nazneen Bobby Assoc. Professor, Dept. of Biotechnology, VFSTR	Member

9.	Dr. Katari Sudheer Kumar Asst. Professor, Dept. of Biotechnology, VFSTR	School Dean Nominee
10.	Dr. Malathi Balasubramaniyan Asst. Professor, Dept. of Biotechnology, VFSTR	Member from VFSTR off-campus, Hyderabad
11.	Dr. Rani J.R. Asst. Professor, Dept. of Bioinformatics, VFSTR	Member Secretary — BI

Agenda of the BoS Meeting:

1. To Discuss and finalize the curriculum structure and credits distribution of B.Tech., Bioinformatics Programme for the regulation 2025 (R25-C25).
2. To Discuss and finalize the elective courses list (Department/ Open/ Minor / Honour) and stream of B.Tech., Bioinformatics Programme for the regulation R25-C25.
3. To Discuss about the SDG and IKS components in the syllabus.
4. To approve the R25-C25 curriculum, syllabus and assessment schemes of B.Tech., Bioinformatics Programme and recommend to the Academic council.
5. Any other points with the permission of Chairperson.



Member Secretary



Chairperson

Annexure – V



DEPARTMENT OF BIOINFORMATICS

Date: 17.04.2025

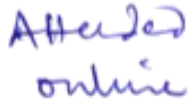
Minutes of Board of Studies Meeting

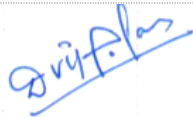
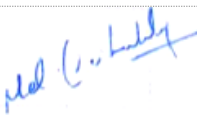
Board of Studies (BoS) meeting of B.Tech., Bioinformatics programme was conducted on 17.04.2025 in blended mode from 10.00 AM to 1.00 PM in ASF 12, 2nd floor, U Block VFSTR and also with the following Google meet link: <https://meet.google.com/ktv-anpa-sry>.

Agenda of the BoS Meeting:

1. To Discuss and finalize the curriculum structure and credits distribution of B.Tech., Bioinformatics Programme for the regulation 2025 (R25-C25).
2. To Discuss and finalize the elective courses list (Department/ Open/ Minor / Honour) and stream of B.Tech., Bioinformatics Programme for the regulation R25-C25.
3. To Discuss about the SDG and IKS components in the syllabus.
4. To approve the R25-C25 curriculum, syllabus and assessment schemes of B.Tech., Bioinformatics Programme and recommend to the Academic council.
5. Any other points with the permission of Chairperson.

The following members were present either thorough offline or online.

S.No.	Name and Designation of the Member	Position	Signature
1	Dr. A.Ranganadha Reddy Professor and HoD, Dept. of Bioinformatics, VFSTR	Chairperson	
2.	Prof. V. Venkata Dasu Professor, Department of Biosciences and Bioengineering, Indian Institute of Technology Guwahati (IITG)	External Member (Academic)	
3.	Prof. Prithish Kumar Varadwaj Professor, Department of Applied Sciences, IIIT Allahabad	External Member (Academic)	

4.	Dr. P. Madhu Babu Sr. Scientist., Omics NextGen Laboratories., Bhimavaram	Invited Member (Industry)	Attended online
5.	Prof. Vijaya Ramu Dirisala Professor, Dept. of Biotechnology, VFSTR	Member	
6.	Prof. S. Asha Professor, Dept. of Biotechnology, VFSTR	Member	
7.	Dr. Abraham Peele Karlapudi Assoc. Professor, Dept. of Biotechnology, VFSTR	Dean, R & D Nominee	
8.	Dr. Md. Nazneen Bobby Assoc. Professor, Dept. of Biotechnology, VFSTR	Member	
9.	Dr. Katari Sudheer Kumar Asst. Professor, Dept. of Biotechnology, VFSTR	School Dean Nominee	
10.	Dr. Malathi Balasubramaniyan Asst. Professor, Dept. of Biotechnology, VFSTR	Member from VFSTR off- campus, Hyderabad	Attended online
11.	Dr. Rani J.R. Asst. Professor, Dept. of Bioinformatics, VFSTR	Member Secretary — BI	

Chairperson Dr. A. Ranganadha Reddy, Professor and Head, Department of Bioinformatics, VFSTR initiated the meeting by welcoming and introducing the external members and invitees to the internal members. Chairperson presented about the *NEP 2020 Compliant Regulation - R25-C25* which emphasis on creating *learning centric* (continuous learning and continuous assessment model), offering B.Tech., B.Tech. with Honours / Research Honours / Minor / Add-on Diploma, providing lateral entry and honorable exit.

The following points were discussed in the BoS meeting:

1. Regulation R25-C25.
2. Curriculum structure with credits, credits distribution (L-T-P-SL).
3. Significance of self-learning (SL)
4. 2 Modules, Module-1 is fundamental with 2 units and Module-2 is fundamental with 3 units.
5. Assessment methods (Formative & Summative).
6. Grading Schemes.
7. Department Elective and Honour courses (streams/pools).

8. Open Elective and Minor courses (streams/pools).
9. Creative work-in-Liu-Course work
10. SDG Mapping and incorporation of IKS components
11. Consideration of new program outcomes (POs) as prescribed by the NBA

The following are the observations:

1. Major restructuring has taken place in the curriculum which is oriented towards continuous learning and assessment based on Module structure.
2. Major reformation has taken place in the curriculum by offering Honours/Specialization degree or Minor degree through 16 more credits with additional courses.
3. R25-C25 curriculum structure including list of professional core, department elective, open elective, Minor and Honour courses of B.Tech, Bioinformatics programme. (**Appendix - I**)
4. The curriculum is encompassing the courses that enable employability or entrepreneurship or skill development, provided in **Appendix - II**.
5. Total average percentage of syllabus revised was **36.80%** compared to previous curriculum provided in **Appendix - III**.
6. The significant changes are made in the content of all courses and hence the courses are considered as new courses provided in **Appendix - IV**.
7. **Indian Knowledge System (IKS)** components are incorporated in the relevant courses and the details are mentioned in **Appendix - V**.
8. The courses in the curricula are mapped with the **Sustainable Development Goals (SDG)** and the mapping details are provided in **Appendix - VI**.
9. Feedback from various stakeholders are incorporated appropriately in the R25-C25 curriculum.

The following improvements are suggested: (Action Points)

1. External members suggested to create more awareness about IKS to the faculty members by conducting either department workshops or institute level workshops.
2. Prof. Prithish Kumar recommended creating awareness among all faculty on the use of AI for domain-specific themes.
3. Dr. Madhu Babu suggested to include Herbal immunomodulatory in Indian traditional medicine. in Immunology and Immunotherapy course.
4. Prof. V. Venkata Dasu suggested to introduce Molecular Genetics.

Note: This point is optional and if any points are there all these points should be properly addressed in ATR report of next BoS. (Appendix - VII)

The following recommendations and approvals are made after the discussion:

1. BoS Members approved the revised regulations, curriculum structure, syllabus, assessment schemes of B.Tech., Bioinformatics programmes and it follows based on the NEP 2020.
2. The details of elective courses (Department/ Open/ Minor / Honour) of B.Tech., Bioinformatics Programme for the regulation R25-C25 are approved.
3. NPTEL courses are approved for the Academic Year 2025-26.
4. SDG mapping and incorporation of the IKS components in the syllabus is approved.

There being no further points for discussion, the Chairperson thanks all the external, internal, invited members and announced that the meeting was concluded.



Member Secretary



Chairperson

- * E-mail confirmation should be enclosed for online attendees.**
- * 2 or 3 Geo tagged photos should be enclosed for online as well as offline meeting.**

DEPARTMENT OF BIOINFORMATICS

APPENDIX I

BTech Bioinformatics Programme: Curriculum Structure

I Year I Semester Structure

Course Title	L	T	P	SL	C	Course category
Elementary Mathematics	3	2	0	3	4	Basic Sciences
Applied Physics	3	2	0	3	4	Basic Sciences
Basics of Electrical and Electronics Engineering	3	0	2	3	3	Basic Engineering
IT Workshop and Bioproducts	3	0	2	3	4	Basic Engineering
Programming in C					1	Humanities
English Proficiency and Communication Skills					3	Basic Sciences / Humanities
Physical Fitness, Sports and Games – I					1	Binary graded
Constitution of India					1	Binary graded
					1	Binary graded
Total					22	

L=Lecture; T= Tutorial; P= Practical; SL= Self Learning; C=Credits

General instructions

- ❖ for each semester, credits may be max. of **25 credits** and max.of **35 contact hours** including all courses. (must not exceed this in any case)
- ❖ NO courses are allowed with only L structure, all courses should be either L+T+P, L+P, L+T, T+P, T, P structure based on the credits. 1L=1 Credit, 2T or 2P=1 Credit.

I Year II Semester

Course Title	L	T	P	SL	C	Course category
Matrices and Differential Equations	3	0	2	3	4	Basic Sciences
Organic Chemistry	3	0	2	3	4	Basic Sciences
Basic Coding Competency	2	0	2	3	3	Basic Engineering
Engineering Graphics	2	0	2	3	3	Basic Engineering
Technical English Communication	0	0	4	0	2	Humanities
Essentials in Cell biology and Microbiology	2	0	2	2	3	Basic Sciences / Humanities
Physical Fitness, Sports and Games – II					1	Basic Engineering
Orientation Session					1	Binary graded
					1	Binary graded
					1	Binary graded
					1	Binary graded
Total					24	

II Year I Semester

Course Title	L	T	P	SL	C	Course category
Biostatistics and Design of Experiments	3	0	2	3	4	Basic Sciences
Biochemistry and Enzymology	2	0	2	2	3	Basic Sciences
Data Structures	3	0	2	3	4	Basic Engineering
Design Thinking and Engineering Orientation	1	0	0	1	1	Basic Engineering
Algorithms in Bioinformatics	3	0	2	3	4	Professional Core-1
Biological Databases	3	0	2	3	4	Professional Core-2
Molecular Biology and Genetic Engineering	3	0	2	3	4	Professional Core-3
Total					24	

II Year II Semester

Course Title	L	T	P	SL	C	Course category
Structural Bioinformatics and Instrumental Techniques	2	-	2	2	3	Basic Sciences
Industry -Interface (I ²) course					1	Dept. Elective-1
					3	Open Elective-1
R Programming for Biological Data Sciences	3	-	2	3	4	Professional Core-4
Molecular Phylogenetics	3	-	2	3	4	Professional Core-5
Computer Aided Drug Design	3	-	2	3	4	Professional Core-6
Bioperl	3	-	2	2	4	Professional Core-7
Open Elective – 1						
Life Skills - II						
					1	Project
Total					23	

III Year I Semester

Course Title	L	T	P	SL	C	Course category
Soft Skills Laboratory					1	Humanities
Quantitative Aptitude & Logical Reasoning					1	Humanities
					3	Dept. Elective-2
Computational Proteomics	3	-	2	3	4	Professional Core-8
Next Generation Sequencing	3	-	2	3	4	Professional Core-9
Immunology and Immunoinformatics	3	-	2	3	4	Professional Core-10
Data mining and Machine Learning for Bioinformatics	3	-	2	3	4	Professional Core-11
Inter-Departmental Project / Course					21	
					4	Honours/Minors
Total					25	

III Year II Semester

Course Title	L	T	P	SL	C	Course category
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Professional Communications skills					1	Humanities
	3		2	3	4	Dept. Elective-3
	3		2	3	4	Dept. Elective-4
					3	Open Elective-2
Metagenomics	3	-	2	3	4	Professional Core-12
Biocomputing	2	-	2	2	3	Professional Core-13
					1	Project
Sub-Total					20	
Honours/Minors (Add-on)					4	Honours/Minors
Total					24	

IV Year I Semester

Course Title	L	T	P	SL	C	Course category
Biosafety Bioethics & IPR	1	-	2	2	2	Humanities
	3		2	3	4	Dept. Elective-5
	3		2	3	4	Dept. Elective-6
Work in lieu of course-research paper/publication/patent/presentation/global certifications					4*	Dept. Elective-7
					3	Open Elective-3
Sub-Total					17	
Honours/Minors (Add-on)					4	Honours/Minors
Total					21	

IV Year II Semester

Course Title	L	T	P	SL	C	Course category
Internship / Project Work					12	Project/Internship
Sub-Total					12	
Honours/Minors (Add-on)					4	Honours/Minors
Total					16	

I. List of Department Elective Courses

S No	Course Title	L	T	P	SL	C
1.	Clinical Data Management	3	-	2	3	4
2.	Expression Data and Image Analysis	3	-	2	3	4
3.	Neural Networks	3	-	2	3	4
4.	Cancer Genomics	3	-	2	3	4
5.	Molecular Modelling and Simulations	3	-	2	3	4
6.	Health Informatics	3	-	2	3	4
7.	Regulatory affairs and clinical trails	3	-	2	3	4
8.	Biological Big Data Management and Analytics	3	-	2	3	4
9.	Cheminformatics and QSAR	3	-	2	3	4
10.	Systems Biology	3	-	2	3	4
11.	Biosafety, Bioethics and Intellectual Property Rights	1	-	2	2	4

II. List of Minor Courses

Course code	Course Title
22BI901	Elements of Biotechnology and Bioinformatics
22BI902	Fundamentals of Forensic Sciences
22BI903	Next Generation Sequencing
22BI904	Forensic Genomics
22BI905	AI in Genomics and Drug design
22BI906	Project

III. List of Honour Courses

22BI951	Pharmacogenomics
22BI952	Metabolomics
22BI953	Comparative and Functional Genomics
22BT953	Metagenomics
22BI954	Project / Open source – Swayam/NPTEL

IV. List of Open Elective Courses

Course code	Course Title
22BI851	Elements of Bioinformatics
22BI852	Cheminformatics and QSAR
22BI853	Computer-Aided Drug Design
22BT853	Computational Biology
22BI854	Vaccine Design

V. List of SWAYAM - NPTEL Courses - NIL



Member Secretary



Chairperson

DEPARTMENT OF BIOINFORMATICS

APPENDIX II

List of Courses that Enables Employability or Entrepreneurship or Skill Development

S. No.	Course Code	Course Title	Year of Introduction	Employability / Entrepreneurship / Skill development
1	25MT104	Elementary Mathematics	2025	Skill Development
2	25MT106	Matrices and Ordinary Differential Equations	2025	Skill Development
3	25PY102	Applied Physics	2025	Skill Development
4	25CT103	Organic Chemistry	2025	Skill Development
...	25EE102	Fundamentals of Electrical and Electronics Engineering	2025	Employability
10	25ME101	Engineering Drawing	2025	Skill Development
...	25CS102	Problem Solving through Python	2025	Employability
...	25EN104	Technical English Communication	2025	Skill Development
25	25CT101	Environmental Studies	2025	Employability , Entrepreneurship
...	25MS101	Management Studies	2025	Employability
30	25CY101	Cyber security	2025	Employability
31	22ST201	Biostatistics and Design of Experiments	2025	Employability
...	22TP201	Data Structures	2025	Employability
50	24BI299	Design Thinking and Engineering Orientation	2026	Employability , Entrepreneurship
	25BI203	Biochemistry and Enzymology		Employability
	25BI204	Microbiology and Metagenomics		Employability
	25BI205	Biological Databases and Management	2025	Employability
	25BI206	Cell and Molecular Biology	2025	Employability
	25BI207	Soft Skills Laboratory	2025	Skill Development

	25BI209	Quantitative Aptitude and Logical Reasoning	2025	Skill Development
	25BI210	Computer Aided Drug Design	2025	Employability
	25BI212	Immunology and Immunoinformatics	2025	Employability
	25BI211	Data mining and Machine Learning for Bioinformatics	2025	Employability
	25BI301	Genomics and Proteomics	2025	Employability
	25BI302	Professional Communication Skills	2025	Skill Development
	25BI303	Next Generation Sequencing	2025	Employability
	25BI304	R Programming for Biological Data Sciences	2025	Employability
	25BI305	Ethics and IPR	2025	Employability
	25BI306	Clinical Data Management	2025	Employability
	25BT401	Expression Data and Image Analysis	2025	Employability
	25BI801	Neural Networks	2025	Employability
	25BI802	Cancer Genomics	2025	Employability
	25BI803	Molecular Modelling and Simulations	2025	Employability
	25BI804	Health Informatics	2025	Employability
	25BI805	Regulatory affairs and clinical trails	2025	Employability
	25BI806	Biological Big Data Management and Analytics	2025	Employability
	25BI807	Cheminformatics and QSAR	2025	Employability
	25BI808	Systems Biology	2025	Employability
	25BI809	Biosensors	2025	Employability
	25BI810	Molecular Genetics	2025	Employability
	25BI811	Biophysics	2025	Employability
	25BI814	Computational Proteomics	2025	Employability
	25BI813	Data analysis for DNA microarrays	2025	Employability
	25BI814	Pharmacogenomics	2025	Employability

	25BI815	Metabolomics	2025	Employability
	25BI851	Comparative and Functional Genomics	2025	Employability
	25BI852	Metagenomics	2025	Employability

Member Secretary

Chairperson

DEPARTMENT OF BIOINFORMATICS

APPENDIX III

Comparison of Course Contents between R25-C25 and R22-C22/C24 Curriculums

S. No.	Course Code	Course Title	% of Changes	Justification for the changes
1.	24BI299	Design Thinking and Engineering Orientation	30%	To align with industry applications, innovation, and entrepreneurship in Bioinformatics.
2.	25BI203	Biochemistry and Enzymology	30%	30% content changes, emphasizing clarity, depth, and industry relevance.
3.	25BI204	Microbiology and Metagenomics	30%	The Existing syllabus was modified to include computational tools, omics technologies, interdisciplinary approaches aligned with current industry and research requirements.
4.	25BI205	Biological Databases and Management	30%	Module1 is modified to modernize curriculum with computational tools and AI integration
5.	25BI206	Cell and Molecular Biology	40%	Module II - modified to provide applied molecular biology skills relevant to health sciences
6.	25BI207	Molecular Phylogenetics	40%	Incorporated Vedic concepts of biodiversity and phylogeny and modern computational phylogenetics and AI
7.	25BI209	Algorithms in Bioinformatics	30%	Module II-Modified with Advanced Bioinformatics Algorithms, Dynamic Programming In Bioinformatics
8.	25BI210	Structural Bioinformatics and Instrumental Techniques	30%	Modified with Computational Methods For Structure Analysis, Experimental Techniques For Structure Determination, Applications of Structural Bioinformatics In Drug Discovery
9.	25BI212	Molecular Biology and Genetic Engineering	100%	New topics under the headings namely 'Gene Editing and Genetic Manipulation' & 'Applications and Ethical Considerations in Genetic Manipulation'
10.	25BI211	Bioperl	20%	Included Flow Control & Code Layout In Perl, Randomization & Genetic Code Processing, Advanced Bioperl Applications
11.	25BI301	Computer Aided Drug Design	20%	Advanced Drug Design & Machine Learning In Drug Discovery, Ai-Driven Drug Discovery & Machine Learning Pipelines
12.	25BI302	Immunology and Immunoinformatics	30%	A few additional topics, such as CAR-T cells, TIL therapy, NK cell therapy, Herbal immunomodulatory in Indian traditional medicine has also been included.
13.	25BI303	Data mining and Machine Learning for Bioinformatics	20%	Machine Learning Models & Optimization, Machine Learning For Drug Discovery: Gene Expression Prediction

				Using Deep Learning
14.	25BI304	Genomics and Proteomics	20%	Tools for genome analysis: Insights from genome sequencing of various species, Beeja Dosha (Seed Defect) and Molecular Mutations.
15.	25BI305	Next Generation Sequencing	40%	NGS-based exploration of medicinal plants for secondary metabolites and therapeutic proteins.
16.	25BI306	R Programming for Biological data sciences	20%	Included topics that prepares students for careers in bioinformatics, biotechnology industries, pharmaceutical research, computational biology research
17.	25BT401	Ethics & IPR	20%	Included topics on emerging trends in IPR and the corresponding transactions
18.	25BI801	Clinical Data Management	20%	Clinical Trial Ethics, Contexts For Clinical Trials, Advanced Clinical Data Analytics & Management
19.	25BI802	Expression Data and Image Analysis	20%	The updated content strengthens students' understanding of modern normalization methods, statistical approaches for differential gene expression analysis, and advanced clustering techniques widely used in genomics research.
20.	25BI803	Neural Networks	45%	The revised syllabus strengthens foundational and advanced concepts in microarray technologies, normalization methods, differential gene expression analysis, image feature extraction, and biological data interpretation.
21.	25BI804	Cancer Genomics	40%	The course integrates bioinformatics tools for biomarker discovery, cancer data analysis, and precision oncology applications.
22.	25BI805	Molecular Modelling and Simulations	35%	Apply computational approaches for conformational analysis and structure prediction. Use machine learning and statistical methods for QSAR and genomic data analysis.
23.	25BI806	Health Informatics	30%	The updated curriculum incorporates modern resources, devices, and methods required for efficient acquisition, storage, retrieval, and utilization of healthcare information in biomedical settings.
24.	25BI807	Regulatory affairs and clinical trails	30%	The updated topics strengthens the integration of traditional knowledge with modern biomedical regulations, promoting culturally informed and ethically responsible healthcare innovation.
25.	25BI808	Biological Big Data Management and Analytics	25%	Students will develop the skills needed to manage, analyze, and interpret biological big data using modern tools and technologies.
26.	25BI809	Cheminformatics and QSAR	30%	The course also explores quantitative structure-activity relationship (QSAR) models and their applications in pharmaceutical and environmental sciences.
27.	25BI810	Systems Biology	35%	The updated content enhances students' understanding of systems-level analysis of complex biological processes using modern computational tools and data-driven methodologies.
28.	25BI811	Biosensors	20%	The course also covers the latest advancements in biosensor technology,

				along with their commercialization and regulatory aspects.
29.	25BI814	Biophysics	30%	The updated content enhances students' understanding of the physical and molecular basis of cellular systems, biomolecular interactions, membrane dynamics, and imaging techniques relevant to modern biomedical research.
30.	25BI813	Computational Proteomics	100%	This course is essential to provide foundational and applied knowledge in large-scale protein analysis, which is a key component of modern omics research. The course enables students to understand protein identification, quantification, structural analysis, and functional annotation using high-throughput proteomic datasets and bioinformatics tools
31.	25BI814	Data analysis for DNA microarrays	50%	Students will be trained with hands-on experience with microarray data analysis tools. They will be able to apply data analysis techniques for gene expression profiling and biological interpretation
32.	25BI815	Stem Cell Engineering	30%	The updated syllabus introduces emerging concepts such as stem cell differentiation, scaffold-based tissue repair, organoid technology, and clinical applications of stem cells, which are highly relevant to current biomedical research and healthcare industries.
33.	25BI851	Elements of Bioinformatics	30%	The modified syllabus to equip students with current bioinformatics tools, modern analytical approaches, and interdisciplinary applications relevant to healthcare, agriculture, drug discovery, and precision medicine.
34.	25BI852	Computational Biology	40%	Inclusion of modern analytical tools, machine learning applications, and large-scale biological data interpretation enhances students' practical and problem-solving skills.
35.	25BI853	Vaccine Design	30%	The updated syllabus introduces modern analytical tools and predictive approaches used in epitope mapping, antigen screening, molecular modeling, and vaccine efficacy evaluation. These additions enhance students' practical knowledge, computational proficiency, and problem-solving abilities required for contemporary vaccine research
36.	25BI901	Elements of Biotechnology and Bioinformatics	50%	Revised to incorporate emerging developments in molecular biology, omics technologies, computational biology, and data-driven life science research. The inclusion of new topics enhances students' bioinformatics tools, and interdisciplinary approaches essential for healthcare, agriculture, environmental sustainability
37.	25BI902	Fundamentals of Forensic Sciences	50%	The inclusion of new topics enhances students' understanding of contemporary forensic tools, evidence analysis, molecular and biological forensic applications, and ethical practices in forensic science.

38.	25BI903	Forensic Genomics	40%	Inclusion of emerging topics such as next-generation sequencing, DNA profiling advancements, forensic databases, and computational genomic analysis will enhance students' practical and analytical skills relevant to current forensic science practices.
39.	25BI904	AI in Genomics and Drug design	50%	Updating the syllabus enhances students' analytical, computational, and research skills while improving alignment with current industry demands and translational healthcare applications.
40.	25BI951	Pharmacogenomics	30%	Updated topics provides knowledge about pharmacogenomics and drug design using genomic applications for drug action and toxicity and deals with how drug therapy can be achieved based on a person's genetic makeup while reducing unwanted drug effects.
41.	25BI952	Metabolomics	30%	The revised content enhances students' understanding of modern metabolite profiling techniques, computational data analysis, biomarker discovery, and integrative multi-omics approaches widely used in biomedical, agricultural, and pharmaceutical research.
42.	25BI953	Comparative and Functional Genomics	45%	provides comprehensive approaches to understand the genome functions, to develop and promote high throughput and large scale approaches to investigate the function of the genomes, their products and the interactions between the two.
43.	25BI954	Metagenomics	35%	Provides comparative analyses to understand how genes, pathways, and environmental factors could translate into ecosystem-level knowledge



Member Secretary



Chairperson

General instructions:

- ❖ Professional Core offered by other departments (i.e. S&H, Management, computer courses) also included in this table. (All First year to Final year courses required)
- ❖ If there is no change in a course, then keep as 0%.
- ❖ If any new course is added, then keep as 100%.
- ❖ If curriculum change is there, then total average % of change should be more than 20%.

DEPARTMENT OF BIOINFORMATICS

APPENDIX IV

List of New Courses in the R25-C25 Curriculum

S. No.	Course Code	Course Title	% of Change	Justification for the Changes
1.	24BI299	Design Thinking and Engineering Orientation	30%	To align with industry applications, innovation, and entrepreneurship in Bioinformatics.
2.	25BI203	Biochemistry and Enzymology	30%	30% content changes, emphasizing clarity, depth, and industry relevance.
3.	25BI204	Microbiology and Metagenomics	30%	The Existing syllabus was modified to include computational tools, omics technologies, interdisciplinary approaches aligned with current industry and research requirements.
4.	25BI205	Biological Databases and Management	30%	Module1 is modified to modernize curriculum with computational tools and AI integration
5.	25BI206	Cell and Molecular Biology	40%	Module II - modified to provide applied molecular biology skills relevant to health sciences
6.	25BI207	Molecular Phylogenetics	40%	Incorporated Vedic concepts of biodiversity and phylogeny and modern computational phylogenetics and AI
7.	25BI209	Algorithms in Bioinformatics	30%	Module II-Modified with Advanced Bioinformatics Algorithms, Dynamic Programming In Bioinformatics
8.	25BI209	Algorithms in Bioinformatics	30%	Module II-Modified with Advanced Bioinformatics Algorithms, Dynamic Programming In Bioinformatics
9.	25BI210	Structural Bioinformatics and Instrumental Techniques	30%	Modified with Computational Methods For Structure Analysis, Experimental Techniques For Structure Determination, Applications of Structural Bioinformatics In Drug Discovery
10.	25BI212	Molecular Biology and Genetic Engineering	100%	New topics under the headings namely 'Gene Editing and Genetic Manipulation' & 'Applications and Ethical Considerations in Genetic Manipulation'
11.	25BI302	Immunology and Immunoinformatics	30%	A few additional topics, such as CAR-T cells, TIL therapy, NK cell

				therapy, Herbal immunomodulatory in Indian traditional medicine has also been included.
12.	25BI305	Next Generation Sequencing	40%	NGS-based exploration of medicinal plants for secondary metabolites and therapeutic proteins.
13.	25BI803	Neural Networks	45%	The revised syllabus strengthens foundational and advanced concepts in microarray technologies, normalization methods, differential gene expression analysis, image feature extraction, and biological data interpretation.
14.	25BI804	Cancer Genomics	40%	The course integrates bioinformatics tools for biomarker discovery, cancer data analysis, and precision oncology applications.
15.	25BI805	Molecular Modelling and Simulations	35%	Added computational approaches for structure prediction, QSAR, and genomic data analysis.
16.	25BI806	Health Informatics	30%	Incorporated modern healthcare information systems and biomedical data management methods.
17.	25BI807	Regulatory Affairs and Clinical Trials	30%	Strengthened integration of traditional knowledge with biomedical regulations and ethical healthcare innovation.
18.	25BI808	Biological Big Data Management and Analytics	25%	Enhanced training in management and interpretation of biological big data using modern technologies.
19.	25BI809	Cheminformatics and QSAR	30%	Expanded QSAR applications in pharmaceutical and environmental sciences.
20.	25BI810	Systems Biology	35%	Enhanced systems-level biological analysis using computational and data-driven methodologies.
21.	25BI814	Biophysics	30%	Improved understanding of biomolecular interactions, membrane dynamics, and biomedical imaging techniques.
22.	25BI813	Computational Proteomics	100%	Introduced foundational and applied large-scale protein analysis and bioinformatics tools.
23.	25BI814	Data Analysis for DNA Microarrays	50%	Added hands-on training in microarray data analysis and biological interpretation.
24.	25BI815	Stem Cell Engineering	30%	Included stem cell differentiation, organoid technology, tissue repair, and clinical applications.
25.	25BI851	Elements of Bioinformatics	30%	Updated with modern bioinformatics tools and interdisciplinary applications.
26.	25BI852	Computational Biology	40%	Added machine learning applications and large-scale biological data interpretation methods.
27.	25BI853	Vaccine Design	30%	Introduced modern analytical tools for epitope mapping, molecular

				modeling, and vaccine evaluation.
28.	25BI901	Elements of Biotechnology and Bioinformatics	50%	Revised with omics technologies, computational biology, and interdisciplinary life science research.
29.	25BI902	Fundamentals of Forensic Sciences	50%	Included modern forensic tools, molecular forensic applications, and ethical practices.
30.	25BI903	Forensic Genomics	40%	Added next-generation sequencing, forensic databases, and computational genomic analysis.
31.	25BI904	AI in Genomics and Drug Design	50%	Enhanced analytical, computational, and translational healthcare applications aligned with industry demands.
32.	25BI951	Pharmacogenomics	30%	Included genomic applications for personalized drug action and toxicity analysis.
33.	25BI952	Metabolomics	30%	Added metabolite profiling, biomarker discovery, and integrative multi-omics approaches.
34.	25BI953	Comparative and Functional Genomics	45%	Strengthened high-throughput genomic analysis and genome function interpretation.
35.	25BI954	Metagenomics	35%	Included comparative analyses linking genes, pathways, and environmental interactions to ecosystem-level understanding.



Member Secretary



Chairperson

General instructions

- ❖ This table should be prepared from Appendix – III.
- ❖ If the percentage of change in the total course content is more than 20%, then the course can be considered as **NEW COURSE**.
- ❖ Professional Core offered by other departments (i.e. S&H, Management, computer courses) also included in this table, if they satisfy the above criteria.
- ❖ If any new course is added, then keep it as 100%.

DEPARTMENT OF BIOINFORMATICS

APPENDIX V

I. Details of IKS Components Incorporated in R25-C25 Curriculum

Course Type	Total number of Courses	Number of Courses Incorporating IKS	Percentage
Professional Core	13	13	20%
Department Electives	15	15	15%
Open Electives	05	05	10%
Minors	04	04	10%
Honours	04	04	10%
Total	40	40	-

II. List of Courses in the R25-C25 Curriculum Incorporating IKS

S. No.	Course Code	Course Title	Type of course	Module (Unit)	IKS Components Incorporated
1.	25BI203	Biochemistry and Enzymology	Professional Core	Module II- Unit II	Kinetic Analysis of Ayurvedic Enzyme-based Formulations.
2.	25BI204	Microbiology and Metagenomics	Basic Sciences	Module I- Unit I	Indigenous Knowledge of Fermentation and Microbial Diversity.
3.	25BI205 25BI206	Biological Databases and Management Cell and Molecular Biology	Professional Core	Module I- Unit I	Documentation of tribal medicinal knowledge, Genomic databases related to Indian medicinal plants.
4.	25BI207	Molecular Phylogenetics	Professional Core	Module II- Unit III	Ayurvedic Classification of Diseases and Body Types (Tridosha Theory).
5.	25BI205	Biological Databases and Management	Professional Core	Module II- Unit III	Conservation Genomics through Traditional Knowledge
6.	25BI209	Algorithms in Bioinformatics	Professional Core	Module II- Unit III	Time Cycles (Yugas) and Molecular Clocks.
7.	25BI210	Structural Bioinformatics and Instrumental Techniques	Professional Core	Module II- Unit II, III	Use of Indian biodiversity resources against modern disease targets, Concept of Paramāṇu in Vaisheshika Sutras
8.	25BI212	Molecular Biology and Genetic Engineering	Professional Core	Module I-Module II	Beejabhaga in Ayurveda, Vriksha Prakriti (Plant Traits & Lineage)
9.	25BI211	Bioperl	Professional Core	Module I- Unit II	Digitization of Ayurvedic and Traditional Medicinal Plant Genomes.
10.	25BI301	Computer Aided Drug Design	Professional Core	Module I- Unit I	Concept of Samavāya in Vaisheshika Sutras
11.	25BI302	Immunology and Immunoinformatics	Professional Core	Module II- Unit I	Herbal immunomodulatory in Indian traditional medicine.
12.	25BI303	Data mining and Machine Learning for	Professional Core	Module II- Unit II	Concept of Epigenetic Control in Ayurveda (Ahara, Vihara, Mana)

		Bioinformatics			
13.	25BI304	Genomics and Proteomics	Professional Core	Module II- Unit I	Beeja Dosha (Seed Defect) and Molecular Mutations.
14.	25BI305	Next Generation Sequencing	Professional Core	Module II- Unit III	NGS-based exploration of medicinal plants for secondary metabolites and therapeutic proteins.
15.	25BI306	R Programming for Biological data sciences	Professional Core	Module II- Unit II	Linear and Nonlinear Relationships in Ayurveda.
16.	25BT401	Ethics & IPR	-	Module II- Unit II	Ancient Indian Agricultural Rights.
17.	25BI801	Clinical Data Management	Departmental Elective	Module II- Unit III	Multi-Omics and Ayurgenomics.
18.	25BI802	Expression Data and Image Analysis	Departmental Elective	Module I- Unit I	Indigenous Plant Genomics and Expression Profiling.
19.	25BI803	Neural Networks	Departmental Elective	Module II- Unit I	Panini's Ashtadhyayi, Nyaya Sutras.
20.	25BI804	Cancer Genomics	Departmental Elective	Module II- Unit II	Ashwagandha, Turmeric, Neem, and Tulsi for their anti-cancer properties.
21.	25BI805	Molecular Modelling and Simulations	Departmental Elective	Module I- Unit II	Concept of Energy Minimization and Equilibrium in Indian Philosophy.
22.	25BI806	Health Informatics	Departmental Elective	Module II- Unit II	AI & ML for Ayurvedic Diagnostics.
23.	25BI807	Regulatory affairs and clinical trails	Departmental Elective	Module I, Unit-I	Ethical principles from susruta samhita
24.	25BI808	Biological Big Data Management and Analytics	Departmental Elective	Module II, Unit-III	Rasayana therapy in multi-target strategies in systems pharmacology.
25.	25BI809	Cheminformatics and QSAR	Departmental Elective	Module II, Unit-III	Traditional medicinal plants, natural products, Ayurveda and modern drug discovery.
26.	25BI810	Systems Biology	Departmental Elective	Module I- Unit II	Gene–Environment Interaction in Traditional Concepts.
27.	25BI811	Biosensors	Departmental Elective	Module I- Unit I	Pratyaksha (Direct Observation)
28.	25BI814	Biophysics	Departmental Elective	Module I- Unit I	Surya Tattva (Solar Influence)
29.	25BI813	Computational Proteomics	Departmental Elective	Module I- Unit I	Structural analysis of enzymes/proteins relevant to Ayurvedic formulations.
30.	25BI814	Data analysis for DNA microarrays	Departmental Elective	Module I- Unit II, Module II-Unit II	Vijnana & Pratyaksha (Knowledge through Observation), Understanding on metabolic pathways of traditional herbal remedies.
31.	25BI815	Stem Cell Engineering	Departmental Elective	Module II-Unit II	Use of Indian medicinal plants for stem cell proliferation, differentiation and tissue repair
32.	25BI851	Elements of Bioinformatics	Open Elective	Module II-Unit III	Proteomic Insights into Ayurveda and Ethnobotany.
33.	25BI852	Computational Biology	Open Elective	Module I-Module II	Rasayana (rejuvenation) principles from Ayurveda with molecular stability and binding energetics of natural compounds.
34.	25BI853	Vaccine Design	Open Elective	Module I-Module II	Ayurvedic Immunomodulators as Natural Adjuvants
35.	25BI901	Elements of Biotechnology and Bioinformatics	Minors	Module I- Unit II	Ancient Indian Perspectives on Life and Biological Systems.
36.	25BI902	Fundamentals of Forensic Sciences	Minors	Module I-Module II	Role of Traditional Knowledge Digital Library (TKDL) in preventing biopiracy and preserving ancient forensic insights.
37.	25BI903	Forensic Genomics	Minors	Module II- Unit I	Indigenous knowledge of community-specific traits, phenotypes, and disease resistance.
38.	25BI904	AI in Genomics and	Minors	Module II- Unit I	AI for decoding Ayurvedic knowledge:

		Drug design			from Sanskrit texts to molecular targets.
39.	25BI951	Pharmacogenomics	Honors	Module I- Unit I	Integration of Ayurvedic diagnostics with genomic data.
40.	25BI952	Metabolomics	Honors	Module II- Unit III	Rasayana and Regenerative Metabolism.
41.	25BI953	Comparative and Functional Genomics	Honors	Module I- Unit II	Holism in Ayurveda – body as an integrated system.
42.	25BI954	Metagenomics	Honors	Module I- Unit I	Application of microbiome analysis to study traditional herbal formulations and probiotic cultures in Ayurveda.

Member Secretary

Chairperson

General instructions:

- ❖ The table-II should be prepared based on the IKS mapped courses only and it should match with the 3rd column of Table-I.

DEPARTMENT OF BIOINFORMATICS

APPENDIX VI

I. Details of SDG Mapped Courses in R25-C25 Curriculum

Course Type	Total number of Courses	Number of Courses Mapped with SDGs	Percentage
Professional Core	13	13	100%
Department Electives	15	15	100%
Open Electives	05	05	100%
Minors	04	04	100%
Honours	04	04	100%
Total	40	40	-

II. List of R25-C25 Courses Mapped with SDGs along with Justification

S. No.	Course Code	Course Title	Type of course	SDGs covered	Justification
1.	25BI203	Biochemistry and Enzymology	Professional Core	3, 4, 9, 12	The course aligns with SDGs 3, 4, 9, and 12 by promoting health-focused innovation, quality education, sustainable bio-design, and biotechnology entrepreneurship.
2.	25BI204	Microbiology and Metagenomics	Basic Sciences	3, 4, 9, 12	Promotes health, preventive nutrition practices, quality education, and innovation through the study of metabolism, enzymes, and Indian Knowledge Systems.
3.	25BI205 25BI206	Biological Databases and Management Cell and Molecular Biology	Professional Core	3, 4, 9, 12	Addresses climate resilience and biodiversity conservation
4.	25BI207	Molecular Phylogenetics	Professional Core	3, 4, 6, 9, 12	Enhances education quality and innovation through digital tools
5.	25BI205	Biological Databases and Management	Professional Core	3, 4, 6, 9	Supports health and sanitation through molecular biology applications
6.	25BI209	Algorithms in Bioinformatics	Professional Core	3, 4, 6, 9, 12	Promotes biodiversity conservation and climate resilience
7.	25BI210	Structural Bioinformatics and Instrumental Techniques	Professional Core	3, 4, 6, 9, 12	The inclusion of Indian Knowledge Systems (IKS) helps in Use of Indian biodiversity resources against modern disease targets, Concept of Paramāṇu in Vaisheshika Sutras
8.	25BI212	Molecular Biology and Genetic Engineering	Professional Core	3, 4, 6, 9, 12	Promotes innovation in healthcare, biodiversity conservation, and sustainable agriculture while

					supporting the SDGs of Good Health and Well-being, Quality Education, Industry, Innovation and Infrastructure, and Responsible Consumption and Production.
9.	25BI211	Bioperl	Professional Core	3, 4, 8, 9, 12	Integrating Indian Knowledge Systems (IKS) topics such as Digitization of Ayurvedic and Traditional Medicinal Plant Genomes can make the syllabus interdisciplinary, culturally relevant, and aligned with modern computational biology applications.
10.	25BI301	Computer Aided Drug Design	Professional Core	3, 4, 8, 9	The SDGs Supports development of efficient and affordable drug discovery methods. Encourages integration of traditional medicinal knowledge with modern therapeutics. Promotes better healthcare innovation through computational approaches,
11.	25BI302	Immunology and Immunoinformatics	Professional Core	3, 4, 9	Understanding these herbal immunomodulators helps students explore their applications in developing vaccine adjuvants, antiviral therapeutics, anti-inflammatory drugs, and treatments for autoimmune diseases.
12.	25BI303	Data mining and Machine Learning for Bioinformatics	Professional Core	3, 4, 8, 9	The syllabus integrates Ayurvedic concepts of Ahara, Vihara, and Mana to highlight how diet, lifestyle, and mental well-being influence human health and disease progression.
13.	25BI304	Genomics and Proteomics	Professional Core	2,3,5,7,9	Helps students understand hereditary biology, genetic disorders, crop improvement, and bioenergy research through an interdisciplinary perspective.
14.	25BI305	Next Generation Sequencing	Professional Core	2,9,12,14,15	supports interdisciplinary learning in drug discovery, herbal genomics, nutrigenomics, precision medicine, and sustainable bioresource management aligned with SDGs 2, 9, 12, 14, and 15.
15.	25BI306	R Programming for Biological data sciences	Professional Core	2,9,12,14,15	Help students connect traditional Indian knowledge with modern genomics and proteomics, enhancing understanding of hereditary biology, genetic disorders, crop improvement, and bioenergy research
16.	25BT401	Ethics & IPR	-	2,12,14,15	Integrating Ayurvedic concepts of linear and nonlinear relationships into “R Programming for Biological Data Sciences” enables students to connect traditional Indian knowledge with computational biology, systems biology, and predictive analytics using R-based data modeling approaches.
17.	25BI801	Clinical Data Management	Departmental Elective	2,3,7,9,12	These SDGs enhance students’ understanding of large-scale biological data management, multi-omics integration, and sustainable healthcare innovations in clinical and

					nutraceutical research.
18.	25BI802	Expression Data and Image Analysis	Departmental Elective	2,3,7, 9, 12	Introduce students to the use of genomics, transcriptomics, and AI-based bioinformatics in studying indigenous medicinal plants, stress-resistant native crops, and traditional Indian cereals for sustainable healthcare and agriculture.
19.	25BI803	Neural Networks	Departmental Elective	3,7, 9, 16	Panini's rule-based grammar system parallels modern machine learning and NLP techniques, supporting applications in bioinformatics, sequence analysis, and AI-driven healthcare systems.
20.	25BI804	Cancer Genomics	Departmental Elective	2,3,7, 9, 16	Indian Knowledge Systems (IKS) can be integrated into the Cancer Genomics course by connecting traditional medicinal plants with modern genomics, bioinformatics, molecular biology, and precision medicine approaches. The following topics can be included as interdisciplinary modules.
21.	25BI805	Molecular Modelling and Simulations	Departmental Elective	2,3,7, 9	Contributes to SDGs 2, 3, 7, and 9 by promoting sustainable agriculture, plant resilience, food security, and bioinformatics-driven crop improvement.
22.	25BI806	Health Informatics	Departmental Elective	2,3,7, 9, 16	AI-based personalized nutrition and Ayurvedic diagnostics support preventive healthcare, balanced nutrition, early disease prediction, and affordable wellness solutions, contributing to SDGs SDG 2 Zero Hunger and SDG 3 Good Health and Well-being.
23.	25BI807	Regulatory affairs and clinical trails	Departmental Elective	3,9, 17	The SDGs (3, 9, 17) emphasize professional ethics, patient safety, informed consent, and responsible handling of clinical and genomic data in regulatory affairs and clinical research. Ancient principles from Sushruta align with modern biomedical ethics, pharmacovigilance, ethical approvals, and healthcare innovations for societal welfare.
24.	25BI808	Biological Big Data Management and Analytics	Departmental Elective	3,6, 9,12	The topics introduce students to demonstrate the application of AI/ML, network biology, and pathway analysis in Ayurvedic drug discovery, supporting SDGs 3, 6, 9, and 12 through innovative and eco-friendly healthcare solutions.
25.	25BI809	Cheminformatics and QSAR	Departmental Elective	3,6,12	AI-driven prediction of bioactive herbal compounds, Green Drug Discovery from Natural Resources Sustainable use of medicinal plants, Toxicity Prediction of Herbal Compounds Safety evaluation of natural products
26.	25BI810	Systems Biology	Departmental Elective	2,3,7, 9, 16	The topic promotes holistic systems biology, sustainable nutrition and agriculture, microbiome research, and

					interdisciplinary biotechnology innovations for improving human health and food security.
27.	25BI811	Biosensors	Departmental Elective	3,6,9,12	The IKS concept of Pratyaksha (Direct Observation) is highly relevant to Biosensors, as biosensor technology relies on direct detection and real-time monitoring of biological signals
28.	25BI814	Biophysics	Departmental Elective	3,4,7,9,12	The IKS topic <i>Surya Tattva (Solar Influence)</i> is relevant to Biophysics. It also promotes sustainable applications of solar energy in water purification, renewable technologies, biosensors, and environmentally responsible biophysical innovations aligned with health and sustainability goals.
29.	25BI813	Computational Proteomics	Departmental Elective	3,9,12	The SDGs (3, 9, 12) are addressed through structural proteomic analysis of Ayurvedic compounds. The integration of Ayurveda with computational proteomics promotes innovation in bioinformatics and precision medicine while encouraging sustainable, eco-friendly drug development using plant-based formulations.
30.	25BI814	Data analysis for DNA microarrays	Departmental Elective	3,9,12,16	The course “Data Analysis for DNA Microarrays” supports SDG 3, 4, 9, and 12 by enabling students to analyze gene expression data for improved disease diagnosis, healthcare research, and precision medicine applications.
31.	25BI815	Stem Cell Engineering	Departmental Elective	3,9,12,15	The topic supports SDGs 3, 9, 12, and 15 by promoting safe and affordable regenerative therapies using medicinal plants, encouraging innovation in stem cell engineering and herbal biotechnology, sustainable use and conservation of medicinal plant biodiversity for eco-friendly biomedical and regenerative medicine applications.
32.	25BI851	Elements of Bioinformatics	Open Elective	3,9,12,16	SDGs 3 and 9 by providing knowledge in computational biology, genomics, drug discovery, and innovative biotechnological research for healthcare improvement. It also addresses SDGs 12 and 16 through sustainable biological data usage, ethical research practices, data transparency, and responsible scientific innovation.
33.	25BI852	Computational Biology	Open Elective	3,4,8,9,12	Integrating computational tools, AI, bioinformatics, and molecular modeling for healthcare innovation, drug discovery, and sustainable therapeutic development. Promotes multidisciplinary education, research opportunities, industrial innovation, and responsible utilization of medicinal plant resources for eco-

					friendly healthcare solutions.
34.	25BI853	Vaccine Design	Open Elective	3,4,8,9,12	Ayurvedic immunomodulators support SDG 3, 4, 8, 9, and 12 by enhancing natural immunity, promoting multidisciplinary education, and enabling safer vaccine development through herbal bioactives. They also drive innovation in biopharmaceuticals and create sustainable, eco-friendly healthcare solutions while generating economic and industrial opportunities.
35.	25BI901	Elements of Biotechnology and Bioinformatics	Minors	3,4,8,9,12	Integrating Indian Knowledge Systems to help to enhance multidisciplinary learning and by creating skill-based opportunities that promote innovation, research, and biotechnology-driven economic growth.
36.	25BI902	Fundamentals of Forensic Sciences	Minors	3,4,8,9,12	The integration of SDGs links traditional knowledge systems with modern investigative biology, emphasizing health, ethics, and evidence-based scientific inquiry in crime detection and justice systems.
37.	25BI903	Forensic Genomics	Minors	3,4,8,9,12	Forensic applications such as toxicology, poison identification, and public health protection while strengthening interdisciplinary scientific learning. Promotes ethical innovation, and responsible use of biological data through digital knowledge systems and research infrastructure.
38.	25BI904	AI in Genomics and Drug design	Minors	3,4,8,9,12	AI-driven discovery of novel therapeutics from genomic and traditional knowledge systems, supporting better health outcomes, sustainable drug development, and responsible use of biological resources.
39.	25BI951	Pharmacogenomics	Honors	3,4,8,9,12	The topic “Integration of Ayurvedic Diagnostics with Genomic Data” is highly relevant to the course Pharmacogenomics because it combines traditional Indian knowledge systems with modern genomic medicine to support personalized healthcare approaches.
40.	25BI952	Metabolomics	Honors	3,4,8,9,12	Promotes integrative approaches to health, disease prevention, and sustainable biomedical innovation. enables genomic and functional analysis of regenerative pathways influenced by traditional Rasayana therapies, supporting precision medicine and bio-resource utilization.
41.	25BI953	Comparative and Functional Genomics	Honors	3,4,8,9,12	This supports innovation in genomic diagnostics, precision therapeutics, and integrative biomedical research infrastructure.
42.	25BI954	Metagenomics	Honors	3,4,8,9,12	The topic on microbiome analysis of Ayurvedic formulations aligns with

					SDGs 3, 4, 8, 9, and 12 by promoting gut health, disease prevention, and development of sustainable, natural therapeutic strategies using metagenomics and bioinformatics.
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III. Mapping of R25-C25 Courses with individual SDGs

SDG No.	SDG Name	No. of courses mapped	Percentage of courses mapped
1	No Poverty	0	0.00%
2	Zero Hunger	9	19.57%
3	Good Health and Well-Being	41	89.13%
4	Quality Education	25	54.35%
5	Gender Equality	1	2.17%
6	Clean Water and Sanitation	9	19.57%
7	Affordable and Clean Energy	9	19.57%
8	Decent Work and Economic Growth	13	28.26%
9	Industry, Innovation and Infrastructure	41	89.13%
10	Reduced Inequalities	0	0.00%
11	Sustainable Cities and Communities	0	0.00%
12	Responsible Consumption and Production	32	69.57%
13	Climate Action	0	0.00%
14	Life Below Water	2	4.35%
15	Life On Land	4	8.70%
16	Peace, Justice and Strong Institutions	6	13.04%
17	Partnerships for the Goals	1	2.17%



Member Secretary

General instructions:

- ❖ Table-III should be prepared based on Table-I and table-II
- ❖ The percentage column is calculated based on the courses mapped for an SDG divided by total number of courses mentioned in Table-I.



Chairperson

DEPARTMENT OF BIOINFORMATICS

APPENDIX VII

Action Taken Report (ATR) on the suggestions given in earlier BoS meetings

S.No.	Action Point	Response
1.	Changes in the syllabus for the existing programmes (detailed syllabus, percentage of the changes, purpose)	- Across all revised courses, an average content update of 36% was achieved to replace obsolete elements with modern competencies. - Modifications ranged from targeted adjustments of specific thematic modules (20% to 50% changes) to full-scale modern amalgamations and newly introduced specializations (100% new). - Molecular Biology and Genetic Engineering: Complete amalgamation of two full-fledged baseline courses into an integrated, advanced core. - Computational Proteomics: Built entirely from scratch to introduce automated mass spectrometry data processing and protein quantification networks.
2.	Change in syllabus for some of the previous BOS approved courses	Committee approved the recommendations of DAAC for change in syllabus of course namely Computer Aided Drug Design (22BI204), Data Mining & Machine Learning (22BI306), Python Programming Biotechnologists (22BI203), Molecular Phylogenetics (22BI307), and AI in Genomics and Drug Design (22BI905). The modifications in the syllabi were made accordingly.



Member Secretary



Chairperson

Note: If there are no suggestions in the earlier BoS meetings, mention the same and submit the report.