RAMNARAIN RUIA AUTONOMOUS COLLEGE, MUMBAI-19

Dept of Bioanalytical Sciences

Minutes of the meeting of the Board of Studies in Bioanalytical Sciences

Date: 21.06.2023

Time: 2:30 pm to 3:30pm

Venue: e-meeting via Google Meet platform

Members Present:

Sr. No.	Name	Signature
1.	Dr.Krishnapriya Mohanraj	
2.	Dr. Ajit Datar	
3.	Dr. Sujata Suvarnapatki	
4.	Dr. Sachin Palekar	
5.	Dr. Sanket Bapat	
6.	Mr. Subodh Chavan	
7.	Dr. Sandhya Menon	
8.	Dr. Nandini Girish	
9.	Dr. Madhura Dhavale	
10.	Ms. Anushka Joshi	
11.	Ms. Sayali Kadge	
12.	Ms. Dhanashree Joshi	
13.	Ms. Gauri Risbud	
14.	Ms. MonaliThorat	

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Minutes of Meeting

Agenda 1: To present the board, the proposed credit system for the Four-Year Undergraduate Program (B.A., B.Sc., BACM) and the Post Graduate Program (M.A., M.Sc.), aligning with the guidelines outlined in NEP2020, commencing from the Academic Year 2023- 24.

Discussed that:

1. Following is the proposed structure of 5-year integrated M.Sc. in Bioanalytical Sciences 2023-24

Year / Level	Semester	Subject 1 Biomedical Sciences	Subject 2 Chemical Sciences	Subject 3 Pharmaceutical Sciences	Subject 4 (Minor) Computational Sciences	Vocational I & Skills	General Electives	AEC	International Research project Case study	Total Credits
II/4.5	I	Biodiversity 4	Organic Chemistry I 4	Human Anatomy and Physiology 4	Mathematics 2	Tools & techniques in Biology 4	Understanding India 2	Indian Knowledge system 2	0	22
	2	Physiology & Biochemistry 4	Organic Chemistry II 4	Pharmaceutics 4	Statistics I	Computer skills 4	Basic Numerical	Environmental Sciences 2	0	22
III/5.0	3	Physiology & Biochemistry 4	Analytical Chemistry 4	Pharmacology I 4	Statistics II	Tools & techniques in Biology 4	Entrepreneurship skills I 2	Communication skills I	0	22
	4	Microbiology & Immunology	Physical & Analytical Chemistry 4	Pharmacology & Toxicology II 4	Statistics III	Instrumental methods of Analysis 4	Entrepreneurship skills II 2	Communication skills II	0	22
III/5.5	5	Molecular Biology 4 Biomaterials &	Spectroscopy & Chromatography I 4 Biochemical Methods	Herbal drug Industry 4	..	..			0	22

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		Bioassays 4	of Analysis 4							
	6	Introduction to Bioanalysis 4	Spectroscopy & Chromatography 4	Modern Pharmaceutical Industry 3	Computational Biology 3	Analytical Instrumentation II 4			Internship/Research project 4	22

Year/ Level	Semester	Subject 1 Bioanalytical Sciences	Subject 2 Chemical Sciences	Subject 3 Pharmaceutical Sciences	Subject 4 (Minor) Computational Sciences	Vocational & Skills	General Elective	AEC	Internship/ Research project/ Case study	
IV/6.0	7	Bioanalytical Sciences 12		RM 4	Theory 2 credits				Internship/Research project 4 credit	
	8	Bioanalytical Sciences 8			Theory 2 credits				Research Project 12	
V/6.5	9	Bioanalytical Sciences 18							Research Project 04	
	10	Bioanalytical Sciences 16							Research Project 06	

2. Following are the proposed changes in the syllabus of F.Y.B.Sc. 2023-24 semester I

Year/ Level	Semester	Subject 1 Bioanalytical Sciences	Subject 2 Chemical Sciences	Subject 3 Pharmaceutical Sciences	Subject 4 (Minor) Computational Sciences	Vocational & Skills	General Elective	AEC	Internship/ Research project/ Case study	Total Credits
I/4.5	1	Biodiversity 4	Organic Chemistry I 4	Human Anatomy and Physiology-I 4	Mathematics 2	Tools & techniques in Biology 4	Understanding India 2	Indian Knowledge system 2	0	22
	2	Physiology & Biochemistry 4	Basic Chemistry 4	Pharmaceutics 4	Statistics I	Computer skills 4	Basic Economics	Environmental Sciences 2	0	22

Resolved that: This credit system structure was approved by the BOS committee members.

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Agenda II: To seek approval for the syllabus of the first-year of undergraduate program (Semester I and II) courses, and Postgraduate Program (Semester I) courses including the courses offered for the subject, Generic Elective or Open Elective Courses, Ability Enhancement Courses, Skill Enhancement Courses, and Vocational Skill Enhancement Courses, Discipline specific Core Courses and Discipline specific elective Courses (whichever is applicable) for the Academic Year 2023-24.

3. The detailed syllabus for F.Y.B.Sc. 2023-24 Sem I is as follows:

	Subject I: Title: Biodiversity & Bioprospecting	
Unit	Details	No of Lectures
I	Microbial Diversity & Bioprospecting	15
II	Plant Diversity & Bioprospecting	15
III	Animal Diversity & Bioprospecting	15
	Subject II: Title: Organic Chemistry	
Unit	Details	No of Lectures
I	IUPAC Nomenclature and Aromaticity	15
II	Stereochemistry	15
III	Fundamentals of Organic Reactions	15
	Subject III: Title: Human Anatomy & Physiology	
Unit	Details	No of Lectures
I	Introduction to Human Body, Cell & Tissue level Organization systems: Integumentary system, skeletal system & joints Body Fluids, Blood and Lymphatic System	15
II	Organ Systems: Nervous, Cardiovascular & Digestive	15
III	Organ Systems: Respiratory, Endocrine and Urinary	15
	Subject IV: Title: Mathematics	
Unit	Details	No of Lectures
I	System of Linear Equations	15
II	Calculus and Ordinary Differential Equation & Applications	15
	Subject V: Title: Tools & techniques in Biology	
Unit	Details	No of Lectures
I	Basic equipments in Biological Lab	15
II	Microscopy	15
III	Techniques in Biology 1. Basic Techniques in Microbiology 2. Plant collection, identification & Authentication 3. Basic techniques in zoology	15
	Subject VI: Title: General Elective (Understanding India)	30 L
	Subject VII: Title: Indian Knowledge system	30 L

4. The detailed syllabus for F.Y.B.Sc. 2023-24 Sem II is as follows

Unit	**Details**	**No of Lectures**
I	Biochemical basis of Life, Introduction to Biomolecules, Enzymes & Coenzymes	15
II	Bioenergetics, Metabolism of Carbohydrates	15
III	Metabolism of Lipids, Proteins and Nucleic Acids	15
Unit	**Details**	**No of Lectures**
I	Heterocyclic Compounds	15
II	Stoichiometry and Preparation of Standard Solutions, Titrimetric analysis	15
III	Chemical Kinetics and Chemical Thermodynamics	15
Unit	**Details**	**No of Lectures**
I	Basic Pharmaceutical Chemistry	15
II	Dosage forms Classifications and Definitions	15
III	Overview of Pharmaceutical Manufacturing, Packaging and Quality Assurance	15

	Subject IV: Title: Statistics	
Unit	Details	No of Lectures
I	Types of Data and Data Condensation	15
II	Measures of Central Tendency & Measures of Dispersion	15
	Subject V: Title: Computational Skills	
Unit	Details	No of Lectures
I	Algorithms & Graphs	15
II	Microsoft Office I (MS word and PowerPoint)	15
III	Microsoft Office Excel	15
	Subject VI: Title: General Economics / Physics	30 L
	Subject VII: Title: Environmental Sciences	30 L

Resolved that: These changes were approved by the BOS committee members.

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5. Proposed structure for Regular M.Sc. in Bioanalytical Sciences (2023-24)

Regular M.Sc. I in Bioanalytical Sciences		
	Semester I	Semester II
Paper 1	Modern Pharmaceutical Industry	Process of Drug Discovery & Development
Paper 2	Practices in Pharmaceutical Industry	Pharmacology, Toxicology and Bioassays
Paper 3	Spectroscopy	Chromatography
Paper 4	Techniques in Biological Analysis	Medicinal Systems and Standardization

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Electives		
Paper 5	Analytical Chemistry I	Analytical chemistry II
	Biochemistry & Molecular Biology I	Biochemistry & Molecular Biology II
Paper 6	Research Methodology	Research Project

6. Proposed structure for Integrated M.Sc. in Bioanalytical Sciences

Integrated M.Sc. I in Bioanalytical Sciences		
	Semester I	Semester II
Paper 1	Modern Pharmaceutical Industry	Practices in Pharmaceutical Industry
Paper 2	Pharmacology, Toxicology, & Bioassays	Process of Drug Discovery & Development
Paper 3	Spectroscopy & Chromatography	Spectroscopy & Chromatography
Paper 4	Techniques in Biological Analysis	Medicinal systems & Standardization of ASU drugs
Electives		
Paper 5	Nutraceuticals and Functional foods I	Nutraceuticals and Functional foods II
	Nanotechnology	Forensic Analysis
Paper 6	Research Methodology	Research Project

7. Syllabus for electives for Reg M.Sc. I (2023-24) Semester I

	Paper V: Title: Analytical Chemistry I	
Unit	Details	No of Lectures
I	Classification of Quantitative methods of analysis	15
II	Chemicals, apparatus and unit operations of analytical chemistry	15
III	Stoichiometry in analytical sample preparation	15
	Paper V: Title: Biochemistry & Molecular Biology I	
Unit	Details	No of Lectures
I	Biomolecules and their analysis	15
II	Basic concepts of Molecular Biology	15
III	Recombinant DNA technology	15
	Paper VI: Research Methodology	30 L

8.

Syllabus for electives for Reg M.Sc. I (2023-24) Semester II

	Paper V: Title: Analytical Chemistry II	
Unit	Details	No of Lectures
I	Gravimetric and Titrimetric methods of Analysis	15
II	pH and Buffers	15
III	Basic Analytical Instrumentation	15
	Paper V: Title: Biochemistry & Molecular Biology II	
Unit	Details	No of Lectures
I	Clinical Biochemistry	15
II	Techniques in Molecular Biology	15
III	Cell and Gene therapy products	15
	Paper VI: Research Project	30 L

9. Syllabus for electives for Int. M.Sc. I Sem VII

	Paper V: Title: Nutraceuticals and Functional foods I	
Unit	Details	No of Lectures
I	Human nutrition and Clinical Dietetics	15
II	Introduction to nutraceuticals	15
III	Quality control of Nutraceuticals	15
	Paper V: Title: Nanotechnology	
Unit	Details	No of Lectures
I	History & Synthesis of Nanoparticles	15
II	Characterisation of Nanoparticles using various analytical techniques	15
III	Industrial and Medical applications of Nanotechnology	15
	Paper VI: Research Methodology	30 L

10. Syllabus for electives for Int. M.Sc. I Sem VIII

	Paper V: Title: Nutraceuticals and Functional Foods II	
Unit	Details	No of Lectures
I	Molecular Biology and Biotechnology for Nutraceuticals and Functional Foods	15
II	Development of Nutraceutical products	15
III	Marketing of Nutraceutical products	15
	Paper V: Title: Forensic Science	
Unit	Details	No of Lectures
I	Introduction to Forensic sciences	15
II	Investigation methods and instrumental analysis in Forensic sciences	15
III	Legal aspects of Forensic sciences	15
	Paper VI: Title: Research Project	30 L

Agenda III: To seek approval for the modifications in the assessment methods, including changes to the question paper pattern for internal and semester-end examinations, as well as the evaluation process for Semester End examinations (Theory/Practical, as applicable).

Discussed that: Following structure for assessment was proposed

Sr. No.	Semester	Type of Course	Number of Credits	Total Marks	Internal Assessment (Marks)	Internal Assessment (Pattern)	Semester End Examination (Marks)	Semester End Examination (Pattern)
1	I	DSC (subject I)	3	75	30	Class Test/Seminar/ Assignments/ open Book Tests	45	3 Questions of 15 Marks each (3 sub questions of which students can write ANY TWO)
2	I	MINOR (Subject 2)	3	75	30	Class Test/Seminar/ Assignments/ open Book Tests	45	3 Questions of 15 Marks each (3 sub questions of which students can write ANY TWO)
3	I	Generic/open Elective (1)	2	50	20	Class Test/Seminar/ Assignments/ open Book Tests	30	2 Questions of 15 marks each (Attempt ANY TWO sub questions from three)
4	I	Generic/open Elective (2)	2	50	20	Class Test/Seminar/ Assignments/ open Book Tests	30	2 Questions of 15 marks each (Attempt ANY TWO sub questions from three)
5	I	VSC	2	50	20	Class Test/Seminar/ Assignments/ open Book Tests	30	2 Questions of 15 marks each (Attempt ANY TWO sub questions from three)
6	I	SEC	2	50	20	Class Test/Seminar/ Assignments/ open Book Tests	30	2 Questions of 15 marks each (Attempt ANY TWO sub questions from three)

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Year	Level	Semester	Mandatory Credits	Elective	RM	OJT/FP	RP	Cum. Credits
I	6	1	14	4	4	0	0	22
		2	14	4	0	4	0	22
II	7	3	14	4			4	22
		4	12	4			6 Research Project/ Internship)	22

b. Proposed Sem III/IX M.Sc.II syllabus (Integrated/Regular) as per the given structure.
Note: Advances in Clinical Diagnostics and Xenobiotic Analysis are electives.

YEAR	SEM	COURSE TITLE	CREDITS
I.M.Sc. II/Reg. M.Sc.II	IX/III	Clinical Research Industry I	3
		Bioanalytical Techniques	3
		OMICS	3
		Intellectual Property Rights	2
		Advances in clinical Diagnostics	3
		Xenobiotic Analysis	
		Practicals on Clinical Research Industry I	1
		Practicals on Bioanalytical Techniques	1
		Practicals on OMICS	1
		Practicals on Pharmaceutical Analysis I	1
		Practicals on Xenobiotic Analysis	
		Research Project	4
		TOTAL	22

a. Proposed Sem IV/X M.Sc.II syllabus (Integrated/Regular) as per the given structure.
Note: Cancer Biology and Biopharmaceuticals and Biosimilars are electives.

YEAR	SEM	COURSE TITLE	CREDITS
I.M.Sc. II/Reg. M.Sc.II	X/IV	Clinical Research Industry II	3
		Pharmaceutical Method Development and Validation	3
		Modern Analytical Instrumentation	3
		Cancer Biology	3
		Biopharmaceuticals & Biosimilars	
		Practicals on Clinical Research Industry II	1
		Practicals on Pharmaceutical Method Development and Validation	1
		Practicals on Modern Analytical Instrumentation	1
		Practicals on Pharmaceutical Analysis I	1
		Practicals on Biopharmaceuticals & Biosimilars	
		Internship/Research Project	6
		TOTAL	22

Resolved that:

1. These changes were approved.
2. For field S.Y.B.Sc. field projects, we received a suggestion that testing local water quality by simple analytical techniques could be a topic of the field project.
3. A detailed write-up regarding field projects will be sent to BOS members.

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Year/ Level	Semester	Subject 1	Subject 2	Subject 3	Subject 4 (Minor)	Vocational & Skills(VSC) Life Skils(LS) Ethics & Value		AEC/GE	Internship/ Research project/ Case study	Total Credits
		Bioanalytical Sciences	Chemical Sciences	Pharmaceutical Sciences	Computational Sciences	VSC	LS			
II/5.0	3	Physiology and Biochemistry	Analytical Chemistry I	Pharmacology I	Statistics II	Tools and Techniques in Biology I	Communication Skills	Entrepreneurship Skills I	-	
	Credits	4(3+1)	4(3+1)	4(3+1)	4(3+1)	(2)	(2)	(2)	(0)	22
		1. Developmental Biology 2. Muscle and nerve conduction 3. Central Dogma of molecular biology	1. Basic Analytical Chemistry 2. pH and Buffers 3. Titrimetry and gravimetry	1.Pharmacokinetics and pharmacodynamics 2.Drugs acting on nervous system 3.Drugs acting on Digestive, excretory & Reproductive system	1. Correlation and Regression 2. Probability theory 3. Theory of estimation and hypothesis testing	1. Basic instruments in an analytical laboratory 2. Instruments based on light scattering/absorption	1.Writing Skills: Formal Writing effective 2.Basics of effective communication	1.The entrepreneur 2.Conceptual Framework		
	Credits	4(3+1)	4(3+1)	4(3+1)	4(3+1)	(2)	(0)	(2)	(2)	22

d. Following is the detailed syllabus as per the proposed structure. SYBSc Sem IV

Year/ Level	Semester	Subject 1	Subject 2	Subject 3	Subject 4 (Minor)	Vocational & Skills(VSC) Life Skils(LS) Ethics & Value		AEC/GE	Internship/ Research project/ Case study	Total Credits
		Bioanalytical Sciences	Chemical Sciences	Pharmaceutical Sciences	Computational Sciences	VSC	LS			
II/5.0	4	Microbiology and Immunology	Analytical Chemistry II	Pharmacology II	Bioinformatics	Tools and Techniques in Biology II	-	Entrepreneurship Skills II	Field Project/Regional Case Study	
	4	1.Bacteriology and Virology 2.Immunology 3.Industrial Microbiology	1.Methods of extraction 2.Basic Spectroscopy 3.Planar Chromatography	1.Systemic anti-infective agents 2.Drugs acting on the haematopoietic system 3.Drugs acting on cardiovascular system	1.Introduction to bioinformatics 2.Basics of Sequencing 3.Pairwise sequence alignment	1.Extraction and Purification of Biomolecules 2.Immunology based analytical techniques	-	1.Launching and Organizing An Enterprise 2.Growth Strategies, Networking & Innovation 3.Principles of Corporate Management	Suggestions	
	Credits	4(3+1)	4(3+1)	4(3+1)	4(3+1)	(2)	(0)	(0)	(2)	22

4. Following changes are proposed in M.Sc. II syllabus

a. Structure given by Mumbai University

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Sr. No.	Semester	Type of Course	Number of Credits	Total Marks	Internal Assessment (Marks)	Internal Assessment (Pattern)	Semester End Examination (Marks)	Semester End Examination(Pattern)
7	I	AEC	2	50	20	ClassTest/Seminar/Assignments/open Book Tests	30	2 Questions of 15 marks each(Attempt ANY TWO sub questions from three)
8	I	VSE	2	50	20	ClassTest/Seminar/Assignments/open Book Tests	30	2 Questions of 15 marks each(Attempt ANY TWO sub questions from three)
9	I	IKS	2	50	20	ClassTest/Seminar/Assignments/open Book Tests	30	2 Questions of 15 marks each(Attempt ANY TWO sub questions from three)
10	I	Practical	1	25	12	NA	13	To be decided by the Departments

Resolved that: This structure was approved.

- Agenda IV: Any other matter with the permission of the Chair.

  Discussed that: Not applicable

  Resolved that: Not applicable

Head.
Department of Bioanalytical Science
Ramnarain Ruia Autonomous College
Matunga, Mumbai-400 019.

RAMNARAIN RUIA AUTONOMOUS COLLEGE, MUMBAI-19

Dept of Bioanalytical Sciences

Minutes of the meeting of the Board of Studies in Bioanalytical Sciences

Date: 22.02.2024

Time: 11:30 pm to 1:30pm

Venue: e-meeting via Google Meet platform

Members Present:

Sr. No.	Name	Signature
1.	Dr.Krishnapriya Mohanraj	
2.	Dr. Ajit Datar	
3.	Dr. Sujata Suvarnapatki	
4.	Dr. Sachin Palekar	
5.	Dr. Vinaykumar Malik	
6.	Dr. Sanket Bapat	
7.	Mr. Subodh Chavan	
8.	Dr. Sandhya Menon	
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Minutes of Meeting

Agenda I: To confirm the minutes of the previously held BOS Meeting.

Discussed that:

1. The minutes were confirmed by the members.

Resolved that: NA

Agenda II: To seek approval for the changes in the syllabi as per NEP2020 structure for SYBA/SYBSc/SYBVoc (Semester III and IV for the year 2024-25), MA/MSc (Part I/II for the year 2024-25).

Discussed that:

1. No changes in the syllabi of F.Y.B.Sc., T.Y.B.Sc., M.Sc.I
2. There are major changes in the syllabi of S.Y.B.Sc. and M.Sc. as per NEP 2020
3. The proposed changes in S.Y.B.Sc. are as follows:

a. Structure given by Mumbai University

Year/ Level	Semester	Subject 1	Subject 2	Subject 3	Subject 4 (Minor)	Vocational & Skills(VSC) Life Skils(LS) Ethics & Value VSC	AEC/GE	Internship / Research project/ Case study	Total Credits
		Bioanalytical Sciences	Chemical Sciences	Pharmaceutical Sciences	Computational Sciences				
II/5.0	3	4(3+1)	4(3+1)	4(3+1)	4(3+1)	(2+2)	(2)	(0)	22
	4	4(3+1)	4(3+1)	4(3+1)	4(3+1)	(2)	(2)	(2)	22

b. Following is the proposed syllabus as per the given structure

Year/ Level	Semester	Subject 1	Subject 2	Subject 3	Subject 4 (Minor)	Vocational & Skills(VSC) Life Skils(LS) Ethics & Value		AEC/GE	Internship/ Research project/ Case study	Total Credits
		Bioanalytical Sciences	Chemical Sciences	Pharmaceutical Sciences	Computational Sciences	VSC	LS			
II/5.0	3	Physiology and Biochemistry	Analytical Chemistry I	Pharmacology I	Statistics II	Tools and Techniques In Biology I	Communication Skills	Entrepreneurship Skills I	-	
	Credits	4(3+1)	4(3+1)	4(3+1)	4(3+1)	(2)	(2)	(2)	(0)	22
	4	Microbiology and Immunology	Analytical Chemistry II	Pharmacology II	Bioinformatics	Tools and Techniques In Biology II	-	Entrepreneurship Skills II	Field Project/Regional Case Study	
	Credits	4(3+1)	4(3+1)	4(3+1)	4(3+1)	(2)	(0)	(2)	(2)	22

c. Following is the detailed syllabus as per the proposed structure: SYBSc Sem III

Agenda III: To seek approval for the changes in the Modalities of assessment (Internal Class tests/Assignments etc.), if any.

Discussed that: No changes in the modalities of assesement

Resolved that: NA

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

Discussed that: NA

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Head.
Department of Bioanalytical Science
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