



# **SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE**

(An Autonomous Institution)

(Approved by AICTE, New Delhi & Affiliated to Pondicherry University)  
(Accredited by NBA-AICTE, New Delhi, ISO 9001:2000 Certified Institution &  
Accredited by NAAC with "A" Grade)

Madagadipet, Puducherry - 605 107



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## **SCHOOL OF ARTS AND SCIENCE**

### **DEPARTMENT OF BIOSCIENCE**

### **B.Sc. BIOTECHNOLOGY**

Minutes of Board of Studies Second Meeting

#### **Venue**

Hall No.203, School of Arts and Science Block

#### **Date and Time**

26.2.2022 from 10.30 am to 2.00 pm



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## SCHOOL OF ARTS AND SCIENCE

### BOARD OF STUDIES ON B.Sc. BIOTECHNOLOGY

#### Minutes of Board of Studies Second Meeting

The Board of Studies second meeting of the Department of Bioscience for B.Sc. Biotechnology Programme was held on 26.2.2022 from 10.30 am to 2.00 pm through offline mode at the Meeting Hall, Administrative Building, School of Arts and Science, Sri Manakula Vinayagar Engineering College (Autonomous), Puducherry.

The following members were present for the BoS meeting

S.No	Name of the Member with Designation and official Address	Members as per UGC norms
1	Dr. T.R.Rajaram, HOD, Department of Bioscience-Biotechnology, School of Arts and Science Sri Manakula Vinayagar Engineering College (Autonomous) Madagadipet, Pondicherry	Chairman
2	Dr. V. Arul Professor, Department of Biotechnology Pondicherry University, Pondicherry.	Subject Expert (University Nominee)
3	Dr. Medha Rajappa Professor, Department of Biochemistry JIPMER, Pondicherry	Subject Expert (Academic Council Nominee)
4	Dr. D. Panneer Scientist C, Microbiology and Molecular Biology, Vector Control Research Centre, Pondicherry	Subject Expert (Academic Council Nominee)
5	Dr. A. Balamurugan Group Leader—Microbiology Lab-Quality Control Solara Active Pharma Sciences Ltd, Cuddalore	Representative from Industry
6	Ms.A.Yuvarani, Assistant Professor Department of Biosciences-Biotechnology School of Arts and Science SMVEC, Madagadipet, Pondicherry	Internal Member
6	Dr. S.Deepa, HOD, Department of Chemistry, School of Arts and Science, SMVEC, Madagadipet, Pondicherry	Internal Member

7	Mr. Krishnamurthy, Assistant Professor, Department of Mathematics, School of Arts and science, SMVEC, Madagadipet, Pondicherry	Internal Member
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## AGENDA OF THE MEETING

### **Item No.: BoS/2022/SAS/UG/BT 2.1**

Welcome address to the BoS Members.

### **Item No.: BoS/2022/SAS/UG/BT 2.2**

To discuss about the first and second semester execution, lab establishment and department activities.

### **Item No.: BoS/2022/SAS/UG/BT 2.3**

To discuss and approve the Curriculum and Syllabi for III and IV semester under Autonomous Regulations 2020 for the B.Sc. Biotechnology.

- Course structure
- Core course
- Discipline Specific Elective
- Open elective offered to other departments
- Skill Enhancement Courses
- Employability Enhancement Courses
- UGC – Mandatory Courses
- Credit requirement

### **Item No.: BoS/2022/SAS/UG/BT 2.4**

To discuss about the general strengthening and supporting for the department.

## Minutes of Meeting

The meeting deliberated on the agenda items that have been approved by the Chairman.

<p><b>Item No.:</b> <b>BoS/2022/SAS/UG/BT</b> <b>2.1</b></p>	<p>Welcome address to the BoS Members</p> <ul style="list-style-type: none"> <li>Chairman of BoS gave the welcome address to the BoS members.</li> </ul>
<p><b>Item.:</b> <b>BoS/2022/SAS/UG/BT</b> <b>No2.2</b></p>	<p>To discuss about the first and second semester execution, lab establishment and department activities.</p> <ul style="list-style-type: none"> <li>The Board discussed about the understanging level of theory and individual students exposure into the practicals and department activities done in the last semester.</li> <li>The Panel appreciated.</li> </ul>
<p><b>Item No.:</b> <b>BoS/2022/SAS/UG/BT2.</b> <b>3</b></p>	<p>To discuss and approve the Curriculum and Syllabi for III and IV semester under Autonomous Regulations 2020 for the B.Sc. Biotechnology.</p> <ul style="list-style-type: none"> <li>The chemistry BOS members and Board chairman have suggested to do modification in chemistry II theory and practical syllabus and the same was accepted by Biotechnology BoS members (Refer Annexure – I).</li> <li>The BoS members have recomended to Replace the 4<sup>th</sup> semester Skill enhancement course Research &amp; Development to Research Methodology. (Refer Annexure –II)</li> <li>The BoS members have recomended to Replace the 6<sup>th</sup> semester core course Research Methodology to Genomice and Proteomics. (Refer Annexure –II)</li> <li>The BoS members have recomended to change the 6<sup>th</sup> semester Skill enhancement course title as R &amp; D and Bioenterepreneurship. (Refer Annexure –II)</li> <li>The BoS members have recomended to offer new Open elective cources to other department students in the 3<sup>ed</sup> and 4<sup>th</sup> semester. (Refer Annexure –III)</li> </ul>
<p><b>Item No.:</b> <b>BoS/2022/SAS/UG/BT</b> <b>2.4</b></p>	<p>To disuuss about the general strenthening and supporting for the department.</p> <ul style="list-style-type: none"> <li>The BoS members have recomended to subscribe Biotechnology Journals.</li> <li>The panel appreciated about the availability of equipments in Biotechnology laboratory.</li> <li>The BoS members have recomended to reduce the weekly hours to the class.</li> <li>The BoS members have recomended to add new Teaching faculty in the next Academic Year.</li> </ul>

The meeting concluded at 2.00 pm with vote of thanks.

### Changes Particulars

Sl.No.	Regulation	Semester	Course Title with Course Code	Changes	Particulars
1	R 2020	II	Chemistry II- A20CHD203	Complete Syllabus and code	The heaviest syllabus was simplified by Chemistry BOS members for the student welfare and the same was approved in Biotechnology BoS. (Annexure –I)
2	R 2020	IV	Research methodology- A20BTS404	Complete Course	The course title was changed from Research & Development into Research Methodology. (Annexure – II)
3	R 2020	IV	Genomics and Proteomics– A20BTT621	Complete Course	Replace the 6 <sup>th</sup> semester core course Research Methodology into Genomice and Proteomics. (Annexure –II)
4	R 2020	VI	R & D and Bioentereprene urship- A20BTS606	Merge the Courses	6 <sup>th</sup> semester Skill enhancement course title was changed as R & D and Bioenterepreneurship.(Annexure –II)
5	R 2020	III & IV	Offering Open elective courses	Title chenges in open elective courses	New Open elective cources to other department students. (Annexure –III)

(Annexure –I)

<b>A20CHD203</b>		<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>Hrs</b>
	<b>CHEMISTRY- II</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>60</b>

### Course Objectives

- To understand the Fundamentals of Organic Chemistry
- To understand stereochemistry of organic molecules
- To gain knowledge about Electrochemistry
- To understand the chemical analysis
- To study about Bioinorganic Chemical analysis

### Course Outcomes

*After completion of this course, the students will be able to*

- CO1**-Develop the basic knowledge about Organic Chemistry
- CO2**- Understand stereochemistry of organic molecules
- CO3** –Understand electrochemistry
- CO4**- Understand about chemical analysis
- CO5**–Understand the Bioinorganic Chemical analysis

### **UNIT I FUNDAMENTALS OF ORGANIC CHEMISTRY (12 Hrs)**

**Classification of organic compounds** – Nomenclature, tetravalency of carbon, - Classification of reagents - electrophiles, nucleophiles and free radicals - Classification of reactions - addition, substitution, elimination, condensation and polymerisation **Polar Effects**-Inductive effect, resonance, hyper-conjugation, steric effect – Keto-enol tautomerism – electrophilic substitution mechanism in benzene (Nitration and Sulphonation)

### **UNIT II STEREOCHEMISTRY (12 Hrs)**

Classifications -Types of isomerism -structural isomerism – chain, position, functional,metamerism – tautomerism – stereo isomerism – Geometrical and optical isomerism.Enantiomerism, Diastereomerism and Meso compounds. D and L configuration; cis – trans nomenclature, R/ S (for only one chiral carbon atoms) and E / Z Nomenclature (for ethene).Chirality of organic compounds with special reference to amino acids and sugar

### **UNIT III ELECTROCHEMISTRY (12 Hrs)**

**Electrochemistry-I:** Strong and weak electrolytes, common ion effect, pH, buffer solutions, Henderson equation and buffer action in biological systems. **Electrochemistry-II:** Galvanic cells: EMF, standard electrode potentials, reference electrodes (NHE and Calomel).

**UNIT IV CHEMICAL ANALYSIS (12Hrs)**

Gravimetric analysis – Introduction- Gravimetric analysis by precipitation, Optimum conditions for good precipitation, Physical nature of precipitate, Purity of precipitate: co-precipitation, post-precipitation, Organic precipitants and their applications. Volumetric analysis - principles of Volumetric analysis, Acid – base titration, redox and metal ion indicators.

**UNIT V BIO INORGANIC CHEMISTRY (12 Hrs)**

Essential & Trace element in Biological process, Metalloporphyrins and with special reference to Haemoglobin and Myoglobin, Biological role of alkali and alkali earth metals with special reference to  $\text{Ca}^{2+}$

**Text Books:**

1. Bhupinder Mehta, Manju Mehta, "Organic Chemistry", Prentice Hall of India Pvt Ltd. New Delhi. 1<sup>st</sup> Edition, 2015.
2. B.S. Bahl and Arun Bahl, "Advanced Organic Chemistry", S. Chand and Company Ltd, New Delhi. 1<sup>st</sup> Edition, 1998.
3. B.B.L Srinivasata, Amarnath Mishra, "Fundamental of Analytical Chemistry", IP Innovative Publication Pvt. Ltd., 1<sup>st</sup> Edition, 2016.

**Reference Books:**

1. I.L. Finar, "Organic chemistry Vol 1", Pearson Edition, Singapore, 6<sup>th</sup> Edition, 2005.
2. R.T. Morrison and R.N. Boyd, "Organic chemistry", Prentice Hall Private Limited, New Delhi, 6<sup>th</sup> Edition, 1997.
3. P.L. Soni, "Text Book of Organic Chemistry", Sultan Chand, New Delhi, 1<sup>st</sup> Edition, 2005.

**Web references:**

1. <https://www2.chemistry.msu.edu/faculty/reusch/VirtTxtJml/nomen1.htm>
2. <https://www.toppr.com/guides/chemistry/organic-chemistry/isomerism/>
3. <https://www.chemguide.co.uk/organicprops/alkanes/background.html>



<b>A20CHL224</b>	<b>CHEMISTRY- II PRACTICALS</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>Hrs</b>
		<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>30</b>

**Course objective**

- To learn the Qualitative analysis of organic samples, Separation of organic compounds, Hardness of water.

**Course Outcomes**

**After the completion of this course, the students will be able to**

- To perform the Qualitative analysis of organic samples, Separation of organic compounds, Hardness of water.

1. Qualitative analysis of Alcohol
2. Qualitative analysis of Aldehydes
3. Qualitative analysis of Nitro Compounds
4. Qualitative analysis of Carboxylic acid (mono)
5. Qualitative analysis of Carbohydrates
6. Determination of Hardness of water.
7. Determination of acetic acid in commercial vinegar using NaOH
8. Determination of alkali content – antacid tablet using HCl

**Text Books:**

1. Rageeb Md. Usman, Dr. Sunila T, "Practical Hand Book of Systematic Organic Qualitative Analysis", Unicorn Publication Pvt. Ltd, 1<sup>st</sup> Edition, 2015.

2. Israel Arthur Vogel , "Vogel's Textbook of Practical Organic Chemistry", Wiley Edition: 1<sup>st</sup> Edition, 1989.
3. Arthur Israel Vogel, "Elementary Practical Organic Chemistry" Prentice Hall Press; 3<sup>rd</sup> Edition, 1980.

**Reference Books:**

1. Venkateswaran. V, Veeraswamy. R, Kulandaivelu. A.R., "Basic Principles of Practical Chemistry", New Delhi, Sultan Chand and Sons. 2<sup>nd</sup> Edition, 1997.
2. Mendham. J, Denney. R.C, Barnes. J.D, and Thomas, M. "Vogel's Text book of Quantitative Analysis", Pearson Education, 1<sup>st</sup> Edition, 1989.
3. Gopalan.R, Subramaniam.P.S and Rengarajan.K, "Elements of Analytical Chemistry", Sultan Chand and Sons, 1<sup>st</sup> Edition, 2004.

**Web references:**

1. [https://assets.cambridge.org/97805212/91125/frontmatter/9780521291125\\_frontmatter.pdf](https://assets.cambridge.org/97805212/91125/frontmatter/9780521291125_frontmatter.pdf)
2. [https://www.csub.edu/chemistry/organic/manual/Lab14\\_QualitativeAnalysis.pdf](https://www.csub.edu/chemistry/organic/manual/Lab14_QualitativeAnalysis.pdf)
3. <http://rushim.ru/books/praktikum/Mann.pdf>

(Annexure –II)

SEMESTER– IV										
S. No	Course Code	Course Title	Category	Periods			Credits	Max.Marks		
				L	T	P		CAM	ESM	Total
<b>Theory</b>										
1	A20BTT410	Genetic Engineering	DSC	4	0	0	4	25	75	100
2	A20BTT411	Immunology	DSC	4	0	0	4	25	75	100
3	A20MAD409	Biostatistics	IDC	3	1	0	4	25	75	100
4	A20BTE4XX	DSE-II	DSE	3	0	0	3	25	75	100
5	A20XXO4XX	Open Elective– II	OE	2	0	0	2	25	75	100
<b>Practical</b>										
6	A20BTL412	Genetic Engineering and Immunology Practical	DSC	0	0	4	2	50	50	100
7	A20MAL404	Biostatistics Practical	IDC	0	0	4	2	50	50	100
<b>Skill Enhancement Course</b>										
8	A20BTS404	Research Methodology	SEC	0	0	4	2	100	0	100
<b>Employment Enhancement Course</b>										
9	A20BTC404	Certification course- IV	EEC	2	0	2	0	100	0	100
							<b>23</b>	<b>425</b>	<b>475</b>	<b>900</b>

SEMESTER–VI										
S. No	Course Code	Course Title	Category	Periods			Credits	Max.Marks		
				L	T	P		CAM	ESM	Total
<b>Theory</b>										
1	A20BTT618	Plant Biotechnology	DSC	3	1	0	4	25	75	100
2	A20BTT619	Microbial Biotechnology	DSC	3	1	0	4	25	75	100
3	A20BTT620	Biosafety, Bio-ethics and IPRs	DSC	3	1	0	4	25	75	100
4	A20BTT621	Genomics and Proteomics	DSC	3	1	0	4	25	75	100
5	A20BTE6XX	DSE- IV	DSE	3	0	0	3	25	75	100
<b>Practical</b>										
5	A20BTL622	Plant Biotechnology and Microbial Biotechnology Practical	DSC	0	0	4	2	50	50	100
<b>Skill Enhancement Course</b>										
6	A20BTS606	R & D and Bio entrepreneurship	SEC	4	0	0	2	100	0	100
<b>Employment Enhancement Course</b>										
7	A20BTC606	Certification course-VI	EEC	2	0	2	0	100	0	100
							<b>23</b>	<b>375</b>	<b>425</b>	<b>800</b>






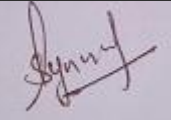
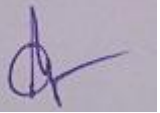
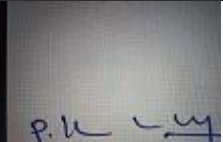
(Annexure –III)

**OPEN ELECTIVE COURSES**

<b>Open Elective – I (Offered in Semester III)</b>				
<b>Sl. No</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Offering Department</b>	<b>Permitted Departments</b>
1	<b>A20BTO301</b>	Biotechnology for human welfare	Bioscience	Chemistry, Computational Studies, English, Food Science, Mathematics, Media Studies, Physics
2	<b>A20BTO302</b>	Food Processing	Bioscience	Chemistry, Computational Studies, English, Food Science, Mathematics, Media Studies, Physics
3	<b>A20BTO303</b>	Food Technology	Bioscience	Chemistry, Computational Studies, English, Food Science, Mathematics, Media Studies, Physics

<b>Open Elective – II (Offered in Semester IV)</b>				
<b>Sl. No.</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Offering Department</b>	<b>Permitted Departments</b>
1	<b>A20BTO401</b>	Herbal Technology	Bioscience	Chemistry, Computational Studies, English, Food Science, Mathematics, Media Studies, Physics
2	<b>A20BTO402</b>	Vermiculture	Bioscience	Chemistry, Computational Studies, English, Food Science, Mathematics, Media Studies, Physics
3	<b>A20BTO403</b>	Biotechnology for Society	Bioscience	Chemistry, Computational Studies, English, Food Science, Mathematics, Media Studies, Physics

The Minutes of the Meeting of the Second Board of Studies of the Department of Bioscience- B.Sc. Biotechnology was held on 26-2-2022 is signed by the members who attended the meeting:

S.No	Name of the Member with Designation and official Address	Members as per UGC norms	Signature
1	Dr. T.R.Rajaram, HOD, Department of Bioscience-Biotechnology, School of Arts and Science Sri Manakula Vinayagar Engineering College (Autonomous) Madagadipet, Pondicherry	Chairman	
2	Dr. V. Arul Professor, Department of Biotechnology Pondicherry University, Pondicherry.	Subject Expert (University Nominee)	
3	Dr. Medha Rajappa Professor, Department of Biochemistry JIPMER, Pondicherry	Subject Expert (Academic Council Nominee)	
4	Dr. D. Panneer Scientist C, Microbiology and Molecular Biology, Vector Control Research Centre, Pondicherry	Subject Expert (Academic Council Nominee)	
5	Dr. A. Balamurugan Group Leader—Microbiology Lab-Quality Control Solara Active Pharma Sciences Ltd, Cuddalore	Representative from Industry	
6	Ms.A.Yuvarani, Assistant Professor Department of Biosciences-Biotechnology School of Arts and Science SMVEC, Madagadipet, Pondicherry	Internal Member	
6	Dr. S.Deepa, HOD, Department of Chemistry, School of Arts and Science, SMVEC, Madagadipet, Pondicherry	Internal Member	
7	Mr. Krishnamurthy, Assistant Professor, Department of Mathematics, School of Arts and science, SMVEC, Madagadipet, Pondicherry	Internal Member	



HOD



Dean-SAS