St. PETER'S UNIVERSITY

St. PETER'S INSTITUTE OF HIGHER EDUCATION AND RESEARCH
(Declared under Section 3 of the UGC Act. 1956)
AVADI, CHENNAI – 600 054.

MINUTES OF THE 1st MEETING OF THE BOARD OF STUDIES IN

BIOCHEMISTRY

Held on 06.02.2017

Members Present

S.No	Name	Designation	Member	Signature
1.	Dr Ganesan N	Professor & Head	Chairman	
2.	Mr. Vijay Anand	Assistant professor	Internal Member	
3.	M. Kavitha	Assistant Professor Department of Biochemistry D.G.Vaishnav College, Chennai 106	External Member	
4.	V. Malathi	Assistant Professor Department of Biochemistry Ethiraj College for Women, Chennai	External Member	

Chairman

Head of the Department
Biochemistry
St. Peter's Institute of Higher Education & Research
Avadi, Chennai - 600 054.

Registrar
St. Peter's Institute of Higher Education and Research
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Avadi, Chennai - 600 054

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Chennai
600 054

1.1 Considered the minutes of the meeting of Board of Studies in BIOCHEMISTRY held on 19.08.2016.

RESOLVED that the minutes of the meeting of Board of Studies in BIOCHEMISTRY held on 19.08.2016 be confirmed

1.2 Reviewed the Regulation & Syllabi of III & IV of B.Sc. BIOCHEMISTRY programme under the Regulations 2016 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation & Syllabi of III & IV of B.Sc. BIOCHEMISTRY programme under the Regulations 2016 with Choice Based Credit System (CBCS) be continued (Appendix I)

1.3 Reviewed the Regulation & Syllabi of I & II of M.Sc. BIOCHEMISTRY programme under the Regulations 2016 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation & Syllabi of I & II of M.Sc. BIOCHEMISTRY programme under the Regulations 2016 with Choice Based Credit System (CBCS) be continued. (Appendix - II)

1.4 Reviewed the curricula developed having relevance to the local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes.

RESOLVED that the syllabi of B.Sc.(BIOCHEMISTRY) programme under the Regulations 2016 and M.Sc. (BIOCHEMISTRY) under the Regulations 2016 developed having relevance to the local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes be approved.

1.5 Considered to include courses having focus on employability/ entrepreneurship /skill development in the syllabi of B.Sc. (BIOCHEMISTRY) under the Regulations 2016 and M.Sc. (BIOCHEMISTRY) under the Regulations 2016

RESOLVED that the courses having focus on employability/ entrepreneurship /skill development year wise in the syllabi of B.Sc. (BIOCHEMISTRY) under the Regulations 2016 and M.Sc. (BIOCHEMISTRY) under the Regulations 2016 to be approved.

Date: 06.02.2017

Chairman
Head of the Department
Biochemistry
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DEPARTMENT OF BIOCHEMISTRY

B.Sc BIOCHEMISTRY

I SEMESTER

Code No.	Course Title	Credits	CA	EA	Total
116UTMT01 / UTET01 / UHIT01/ 116UFRT01	**Part I :** Language -I (Tamil -I / Telugu -I / Hindi – I / French - I)	3	25	75	100
116UEHT02	**Part II :** English –I	3	25	75	100
116UBYT03	**Part III Core Subject:** Nutritional Biochemistry	5	25	75	100
116UBYT04	Allied Paper- I: Chemistry - I	3	25	75	100
116UBYP02	**Allied Practical :** Chemistry	2	40	60	100
116UBYT05	Non Major Elective -I	2	25	75	100
116UCCT01	Soft Skills (Common to all UG Branches)	2	50	50	100
	Total	**20**	**215**	**485**	**700**

II Semester

Code No.	Course Title		Credits	CA	EA	Total
216UTMT01 / UTET01 / UHIT01/ 216UFRT01	Part **I :** Language -II (Tamil - II / Telugu - II / Hindi – II / French - II)		3	25	75	100
216UEHT02	**Part II :** English –II		3	25	75	100
216UBYT03	**Part III Core Subject:**	Cell Biology	5	25	75	100
216UBYP01		Core Practical –I	4	40	60	100
216UBYT04	**Allied Paper- II:** Chemistry – II		3	25	75	100
216UBYP02	**Allied Practical :** Chemistry		4	40	60	100
216UBYT05	**Non Major Elective -II:** Human diseases and Preventive Aspects		2	25	75	100
216UCCT02	Soft Skills (Common to all UG Branches)		2	50	50	100
	Total		**26**	**255**	**575**	**800**

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M.Sc BIOCHEMISTRY

I Semester

Code No.	Course Title		Credit	Marks		
Theory				**CA**	**EA**	**Total**
116PBYT01	**Core Sub:**	Biomolecules	4	25	75	100
116PBYT02		Biochemical Techniques	4	25	75	100
116PBYT03		Physiology and Cell Biology	4	25	75	100
116PBYT04	**Elective Paper - I**: Microbiology		4	25	75	100
	Total		**16**	**100**	**300**	**400**

II Semester

Code No.	Course Title		Credit	Marks		
Theory				**CA**	**EA**	**Tota**
216PBYT01	**Core Sub:**	Enzymes and Enzyme Technology	4	25	75	100
216PBYT02		Intermediary Metabolism I	4	25	75	100
216PBYT03		Intermediary Metabolism II	4	25	75	100
216PBYP01		Practical -I	2	40	60	100
216PBYP02		Practical -II	2	40	60	100
216PBYT04	**Elective Paper - II:** Energy and drug metabolism		4	25	75	100
216PBYT05	**Extra Disciplinary - I**: Essential Biochemistry		4	25	75	100
		Total	**24**	**205**	**495**	**700**

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MINUTES OF THE 2nd MEETING OF THE BOARD OF STUDIES IN

BIOCHEMISTRY

Held on 25.09.2017

Members Present

S.No	Name	Designation	Member	Signature
1.	Dr GANESAN N	Professor& Head	Chairman	
2.	Mr. Vijay Anand	Professor & Head	Internal Member	
3.	Ms.BV.Febiyola	Assistant Professor	Internal Member	
4.	Dr. D. Saravanan	Assistant Professor Department of Biochemistry D.G.Vaishnav College,Chennai 106	External Member	
5.	Dr. S. J. Selvaraj	Scientist E Meenakshi Ammal Dental College, MAHER	External Member	

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Registrar
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Avadi, Chennai - 600 054

Chairman
Head of the Department
Biochemistry
St. Peter's Institute of Higher Education & Research
Avadi, Chennai - 600 054.

2.1 Considered the minutes of the 2nd meeting of Board of Studies in BIOCHEMISTRY held on 06.02.2017.

RESOLVED that the minutes of the 2nd meeting of Board of Studies in BIOCHEMISTRY held on 06.02.2017 be confirmed

2.2 Reviewed the Regulation & Syllabi of B.Sc. BIOCHEMISTRY programme under the Regulations 2016 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation & Syllabi of B.Sc. BIOCHEMISTRY programme under the Regulations 2016 with Choice Based Credit System (CBCS) be continued.

2.3 Reviewed the Regulation & Syllabi of M.Sc. BIOCHEMISTRY programme under the Regulations 2016 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation & Syllabi of M.Sc. BIOCHEMISTRY programme under the Regulations 2016 with Choice Based Credit System (CBCS) be continued.

2.4 Considered to include courses having focus on employability/ entrepreneurship /skill development in the syllabi of B.Sc. (BIOCHEMISTRY) under the Regulations 2016 and M.Sc. (BIOCHEMISTRY) under the Regulations 2016

RESOLVED that the courses having focus on employability/ entrepreneurship /skill development year wise in the syllabi of B.Sc. (BIOCHEMISTRY) under the Regulations 2016 and M.Sc. (BIOCHEMISTRY) under the Regulations 2016 to be approved.

Date: 25.09.2017

Chairman

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MINUTES OF THE 3rd MEETING OF THE BOARD OF STUDIES IN

BIOCHEMISTRY

Held on 12.02.2018

Members Present

S.No	Name	Designation	Member	Signature
1.	Dr Ganesan N	Professor& Head	Chairman	
2.	Mr. Vijay Anand	Assistant Professor	Internal Member	
3.	Ms.BV.Febiyola	Assistant Professor	Internal Member	
4.	Dr. D. Saravanan	Assistant Professor Department of Biochemistry D.G.Vaishnav College,Chennai 106	External Member	
5.	Dr. S. J. Selvaraj	Scientist E Meenakshi Ammal Dental College, MAHER	External Member	

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Registrar
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Avadi, Chennai-600 054

Chairman
Head of the Department
Biochemistry
St. Peter's Institute of Higher Education & Research
Avadi, Chennai - 600 054.

3.1 Considered the minutes of the 2nd meeting of Board of Studies in BIOCHEMISTRY held on 25.09.2017.

RESOLVED that the minutes of the 2nd meeting of Board of Studies in BIOCHEMISTRY held on 25.09.2017 be confirmed

3.2 Reviewed the Regulation & Syllabi III & IV of B.Sc. BIOCHEMISTRY programme under the Regulations 2016 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation & Syllabi of III & IV of B.Sc. BIOCHEMISTRY programme under the Regulations 2016 with Choice Based Credit System (CBCS) be continued (Appendix I)

3.3 Reviewed the Regulation & Syllabi of III & IV of M.Sc. BIOCHEMISTRY programme under the Regulations 2016 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation & Syllabi of III & IV of M.Sc. BIOCHEMISTRY programme under the Regulations 2016 with Choice Based Credit System (CBCS) be continued. (Appendix-II)

3.4 Considered to include value added courses imparting transferable and life skills offered beyond the curriculum in the syllabi of B.Sc. (BIOCHEMISTRY) and M.Sc. (BIOCHEMISTRY).

RESOLVED that the value added courses imparting transferable and life skills offered beyond the curriculum such as course on "Environmental Toxicology" be approved for the upcoming semester (2018-19 – Odd semester).

Date: 12.02.2018

Chairman

Head of the Department
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DEPARTMENT OF BIOCHEMISTRY
B.Sc BIOCHEMISTRY

III Semester

Code No.	Course Title		Credits	CA	EA	Total
316UTMT01 / UTET01 / UHIT01/ 316UFRT01	**Part I :** Language -III (Tamil -III / Telugu -III / Hindi –III/ French -III)		3	25	75	100
316UEHT02	**Part II :** English –III		3	25	75	100
316UBYT03	**Part IV Core Subject:**	Chemistry of Biomolecules I	5	25	75	100
316UBYT04	**Allied Paper- III:** Microbiology – I		3	25	75	100
316UCCT03	Soft Skills (Common to all UG Branches)		2	50	50	100
		Total	**16**	**150**	**350**	**500**

IV SEMESTER

Code No.	Course Title		Credits	CA	EA	Tot
416UTMT01 / UTET01/ UHIT01 / 416UFRT01	Language -IV (Tamil -IV / Telugu - IV / Hindi-IV / French -IV)		3	25	75	10
416UEHT02	English –IV		3	25	75	10
416UBYT03	**Core Subject :**	Chemistry of Biomolecules- II	5	25	75	10
416UBYP01		Core Practical II	4	40	60	10
416UBYT04	**Allied Paper- IV:** Microbiology – II		3	25	75	10
416UBYP02	**Allied Practical :** Microbiology		4	40	60	10
416UEST01	**PART IV:**Environmental Studies (Common to all UG Branches)		2	25	75	10
416UCCT04	Soft Skills (Common to all UG Branches)		2	50	50	10
		Total	**26**	**255**	**545**	**80**

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M.Sc BIOCHEMISTRY

III Semester

Code No.	Course Title		Credit	Marks		
Theory				CA	EA	Total
316PBYT01	Core sub:	Biotechnology	4	25	75	100
316PBYT02		Clinical Biochemistry I	4	25	75	100
316PBYT03		Molecular Biology	4	25	75	100
316PBYT04	**Elective Paper - III**: Biostatistics		4	25	75	100
316PBYT05	**Extra Disciplinary - II:** Life Style — diseases Prevention		4	25	75	100
	Total		**20**	**125**	**375**	**5OO**

IV Semester

Code No.	Course Title		Credit	Marks		
Theory				CA	EA	Total
416PBYT01	**Core SUb:**	Hormones	4	25	75	100
416PBYT02		Clinical Biochemistry - II	4	25	75	100
416PBYP01		Practical - III	2	40	60	100
416PBYP02		Project and Viva	2	40	60	100
416PBYT03	**Elective Paper - IV**: Signal transduction		4	25	75	100
416PBYT04	**Elective Paper - V** : Immunochemistry		4	25	75	100
	Total		**20**	**18O**	**420**	**6OO**

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MINUTES OF THE 4th MEETING OF THE BOARD OF STUDIES IN

BIOCHEMISTRY

Held on 17.09.2018

Members Present

S.No	Name	Designation	Member	Signature
1.	Dr.N Radhakrishnan	Professor& Head	Chairman	
2.	Ms.BV.Febiyola	Assistant Professor	Member	
3.	Dr. A. Suresh Kumar	Scientist, Biochemistry & Biotech Division CSIR-CLRI, Chennai	External Member	
4.	Dr. BaluRanganathan	Technology – Director, Palms connect, Solution Pvt. Ltd, Chennai	External Member	

Chairman
Head of the Department
Biochemistry
St. Peter's Institute of Higher Education & Research
Avadi, Chennai - 600 054.

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Registrar
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Avadi, Chennai - 600 054

4.1 Considered the minutes of the 2nd meeting of Board of Studies in BIOCHEMISTRY held on 12.02.2018.

RESOLVED that the minutes of the 3rd meeting of Board of Studies in BIOCHEMISTRY held on 12.02.2018 be confirmed

4.2 Reviewed the Regulation & Syllabi of B.Sc. BIOCHEMISTRYprogramme under the Regulations 2016 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation and Syllabi of B.Sc. (BIOCHEMISTRY) programmes under the Regulations 2016 with Choice Based Credit System (CBCS) be continued taking into consideration of the suggestions and remarks given by the members to include the new elective course "316UBYT04- Fermentation Technology". (Appendix - I).

4.3 Reviewed the Regulation &Syllabi of M.Sc. BIOCHEMISTRYprogramme under the Regulations 2016 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation & Syllabi of M.Sc. BIOCHEMISTRYprogramme under the Regulations 2016 with Choice Based Credit System (CBCS) be continued.

4.4 Reviewed the curricula developed having relevance to the local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes.

RESOLVED that the syllabi of B.Sc. (BIOCHEMISTRY) programme under the Regulations 2016 and M.Sc. (BIOCHEMISTRY) under the Regulations 2016 developed having relevance to the local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes be approved.

4.5 Considered to include courses having focus on employability/ entrepreneurship/skill development in the syllabi of B.Sc. (BIOCHEMISTRY) programme under the Regulations 2016 and M.Sc. (BIOCHEMISTRY) under the Regulations 2016

RESOLVED that the courses having focus on employability/ entrepreneurship /skill development year wise in the syllabi of B.Sc. (BIOCHEMISTRY) programme under the Regulations 2016 and M.Sc. (BIOCHEMISTRY) under the Regulations 2016 to be approved.

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4.6 Reviewed and considered the curriculum feedback analysis and action taken report based on the suggestions given by the stake holders.

Resolved that the curriculum feedback analysis and action taken report based on the suggestions given by the stake holders to be approved. (Appendix – II).

Date: 17.09.2018

Chairman

Head of the Department
Biochemistry
St. Peter's Institute of Higher Education & Research
Avadi, Chennai - 600 054.

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DEPARTMENT OF BIOCHEMISTRY
B.Sc BIOCHEMISTRY

Appendix – I

316UBYT04 – FERMENTATION TECHNOLOGY

UNIT-I

Scope and importance of biotechnology. Recombinant DNA technology- Definition, restriction endonucleases- types, role, recognition sequences, cleavage pattern, modification of cuts ends, vectors- plasmid, cosmid, phage. Enzymes used in rDNA technology- DNA ligases, Alkaline phosphatase, polynucleotide kinase, linkers, homopolymer tailing, end labeling and construction maps of PBR322, λ bacteriophage.

UNIT-II

Steps in genetic engineering- Construction of genomic library. Synthesis of cDNA Construction of cDNA library. Gene transfer methods- transformation, conjugation, transduction, microinjection and electroporation. Selection-selectable markers, chromogenic substrate and screening of clones- colony hybridization, screening with antibodies.

UNIT-III

Plant tissue culture- basic requirements for culture, M S medium, callus culture, protoplast culture. Vectors – Ti plasmid (cointegration vector and binary vector), Viral vectors- TMV, CaMV and their applications. Transgenic plants – pest resistant, herbicide resistant and stress tolerant plants.

UNIT-IV

Vectors for gene transfer in animal cells - SV 40 Vector. Basics of transfection methods- calcium phosphate precipitation, DEAE- dextran mediated transfection. Transgenic miceretroviral transfer and stem cell mediated transfer, applications. Embryonic stem cell- definition, ES cell culture to produce differentiated cells, applications. PCR - application in clinical diagnosis and forensic science. Southern blotting, Northern blotting and ELISA – principle, method and applications.

UNIT-V

Production and applications of ethanol and streptomycin (industrial Biotechnology), Proteases (Enzyme biotechnology), Biogas, Biodiesel (Fuel biotechnology), Waste water treatment (Environmental Biotechnology), Vaccines and monoclonal antibodies (Medical biotechnology).

Books Recommended:

1. David Freifelder (1992) Essentials of Molecular Biology (2nd ed) Jones & Bartlett Pub
2. Click B.R. and Pasternark J.J (2010). Molecular Biotechnology: Principles and Applications of Recombinant DNA. (4th ed) American Society for Microbiology
3. James D. Watson , Amy A. Caudy , Richard M. Myers , Jan Witkowski (2006) , Recombinant DNA: Genes and Genomes - a Short Course (3rd ed),W.H.Freeman & Co
4. Satyanarayana U (2008), Biotechnology, Books & Allied (P) Ltd.
5. Casida L (2007) Industrial Microbiology , New Age International
6. Reed G (2004) Prescott and Dunn's Industrial Microbiology, CBS Publishers & Distributors

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Appendix – II

Program	Stakeholder	Feedback	Recommendation	Action taken
BIOCHEMISTRY	Students	It seems that students still requires more competent skills to face the industrial evaluation	Teaching and educational activities to be incorporated in future.	Students were asked to present PPT on the assured topics & activities like Role play were included
	Teachers	Evaluation practices require more improvement to streamline the curriculum taught.	Evaluation practices needs to be conducted more in future.	Continuous assessment tests & Model Exams were conducted to enhance the follow-up of concepts taught.
	Alumni	Upgrading on use of ICT methods were favoured.	Facultie were insisted to use more ICT enabled teaching methods.	Faculties were requested to opt for ICT teaching methods like PPTs presentation, online quiz.

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MINUTES OF THE 5th MEETING OF THE BOARD OF STUDIES IN

BIOCHEMISTRY

Held on 12.03.2019

Members Present

S.No	Name	Designation	Member	Signature
1.	Dr. N. Radhakrishnan	Professor& Head	Chairman	
2.	Dr. P. Vasantha Srinivasan	Assistant Professor	Member	
3.	Ms.BV.Febiyola	Assistant Professor	Member	
4.	Dr. A. Suresh Kumar	Scientist, Microbiology & Biotech Division, CSIR - CLRI, Chennai.	External Member	
5.	Dr. Balu Ranganathan	Technology-Director, M/s Palmsconnect Solution Pvt. Ltd. Chennai.	External Member	

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Chairman
Head of the Department
Biochemistry
St. Peter's Institute of Higher Education & Research
Avadi, Chennai - 600 054.

5.1 Considered the minutes of the 4th meeting of Board of Studies in BIOCHEMISTRY held on 17.09.2018.

RESOLVED that the minutes of the 4th meeting of Board of Studies in BIOCHEMISTRY held on 17.09.2018 be confirmed

5.2 Reviewed the Regulation & Syllabi of B.Sc. BIOCHEMISTRY programme under the Regulations 2016 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation and Syllabi of B.Sc. (BIOCHEMISTRY) programmes under the Regulations 2016 with Choice Based Credit System (CBCS) be continued taking into consideration of the suggestions and remarks given by the members to include the following new elective course (Appendix – I)

1. 216UBYT04- Chemistry - II
2. 416UBYT04- Mini Project

5.3 Reviewed the Regulation & Syllabi of M.Sc. BIOCHEMISTRY programme under the Regulations 2016 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation & Syllabi of M.Sc. BIOCHEMISTRY programme under the Regulations 2016 with Choice Based Credit System (CBCS) be continued.

5.4 Reviewed the curricula developed having relevance to the local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes.

RESOLVED that the syllabi of B.Sc. (BIOCHEMISTRY) programme under the Regulations 2016 and M.Sc. (BIOCHEMISTRY) under the Regulations 2016 developed having relevance to the local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes be approved.

5.5 Considered to include courses having focus on employability/ entrepreneurship/skill development in the syllabi of B.Sc. (BIOCHEMISTRY) programme under the Regulations 2016 and M.Sc. (BIOCHEMISTRY) under the Regulations 2016

RESOLVED that the courses having focus on employability/ entrepreneurship /skill development year wise in the syllabi of B.Sc. (BIOCHEMISTRY) programme under the Regulations 2016 and M.Sc. (BIOCHEMISTRY) under the Regulations 2016 to be approved.

St. Peter's Institute of Higher Education and Research Deemed to be University Chennai 600 054

Date: 12.03.2019

Registrar
St. Peter's Institute of Higher Education and Research
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Avadi, Chennai-600 054.

Chairman
Head of the Department
Biochemistry
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DEPARTMENT OF BIOCHEMISTRY
B.Sc BIOCHEMISTRY

Appendix – I

Course Code	Course Title	L T P C
216UBYT04	CHEMISTRY -II	5 0 0 4

Course Objectives:

1. To enable the learner to understand the significance of metal ions and coordination compounds in biological systems.
2. To enable the learner to understand the important role of metals in medicine.

UNIT - I CO- ORDINATION CHEMISTRY **No. of Hours :**

Definition of terms - Classification of Ligands - Nomenclature - Chelation - EDTA and the application – Wernar's Theory - Effective Atomic Number - Pauling's theory- Postulates - Applications to Ni(CO)4,Ni(CN)4, (CO(CN)6)'3- • Merits and Demerits of. Werners and Pauling's theory - Biological Role of haemoglobin and Chlorophyll (elementary idea only) - Applications of co-ordination compounds in qualitative analysis and Quantitative analysis like Separation of. copper and cadmium ions; Nickel and cobalt ion; Identification of metal ions like cu, Fe and Ni. Estimation of Ni using DMG and Al using Oxine

UNIT 2:BIOMOLECULES **No. of Hours :**

Classifications, preparation and reactions of glucose and fructose. Discussion of open and ring structure of glucose. Mutarotation. Interconversion of glucose to fructose and vice versa - Preparation and properties of sucrose. Properties of starch, cellulose and derivatives of cellulose - Diabetes - causes and control :measures RNA and DNA (elementary idea only)b- Amino acids: Classification, preparation and properties of alanine -preparation of dipeptide using Bergman method.

UNIT 3: PHASE DIAGRAM **No. of Hours :**

Phase rule: Definition of terms, application of phase rule to water system - reduced phase rule and its application to Pb-Ag system. Freezing mixture - Completely miscible and partially miscible liquid systems - upper and lower critical solution temperatures

UNIT 4: ELECTROCHEMISTRY No. of Hours :

Galvanic cells – emf - standard electrode potential - reference electrodes -electrochemical series and its applications - Determination of pH using electrbmeric method - Electroplating process -Nickel and Chrome plating - Different type of cells - primary cell, Secondary cell and fuel cells -Corrosion and methods of prevention, .Conductometric titrations - hydrolysis of salts. Derivation of Kh - Definition of pH and its determination by colorimetric method. Buffer solution -; Henderson's equation. Applications of pH and buffer in biological processors and industries - Corrosion and its prevention.

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UNIT 5: ANALYTICAL CHEMISTRY No. of Hours :

Introduction to Qualitative and Quantitative Analysis - Principle of volumetric analysis - Separation techniques - extraction - distillation - crystallization— Chromatographic separations - Principles and applications of column , paper, thin layer, gas-liquid and ion- exchange.

BOOKS FOR REFERENCE

1. Dr. Veeraiyan V., Text book of Ancillary Chemistry, Highmount Publishing house, Chenna-14. Edition - 206o. (Both in Tamil and English)

2. Vaithiyanathan S. and Others, Text book of Ancillary Chemistry, Priya Publications, Karur-2. Edition -2006.

Expected Course Outcomes:

On the successful completion of the course, students will be able to

CO1: Understand the active roles played by metal ions and coordination compounds in biological systems.

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MINUTES OF THE 6th MEETING OF THE BOARD OF STUDIES IN

BIOCHEMISTRY

Held on 19.09.2019

Members Present

S.No	Name	Designation	Member	Signature
1.	Dr. N. Radhakrishnan	Professor& Head	Chairman	
2.	Dr. P. VasanthaSrinivasan	Professor & Head	Internal Member	
3.	Ms.BV.Febiyola	Assistant Professor	Internal Member	
4.	Dr. A. Suresh Kumar	Scientist, Biochemistry & Biotech Division CSIR-CLRI, Chennai	External Member	
5.	Dr. G. SriramPrasath	Assistant Professor, Department of Biochemistry D.G Vaishnav College	External Member	

Chairman
Head of the Department
Biochemistry
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6.1 Considered the minutes of the 5th meeting of Board of Studies in BIOCHEMISTRY held on 12.03.2019.

RESOLVED that the minutes of the 5th meeting of Board of Studies in BIOCHEMISTRY held on 12.03.2019 be confirmed

6.2 Reviewed the Regulation & Syllabi of B.Sc. BIOCHEMISTRYprogramme under the Regulations 2016 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation and Syllabi of B.Sc. (BIOCHEMISTRY) programmes under the Regulations 2016with Choice Based Credit System (CBCS) be continued.

6.3 Reviewed the Regulation &Syllabi of M.Sc. BIOCHEMISTRYprogramme under the Regulations 2016 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation & Syllabi of M.Sc. BIOCHEMISTRYprogramme under the Regulations 2016 with Choice Based Credit System (CBCS) be continued.

6.4 Reviewed the curricula developed having relevance to the local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes.

RESOLVED that the syllabi of B.Sc. (BIOCHEMISTRY) programme under the Regulations 2016 and M.Sc. (BIOCHEMISTRY) under the Regulations 2016 developed having relevance to the local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes be approved.

6.5 Considered to include courses having focus on employability/ entrepreneurship/skill development in the syllabi of B.Sc. (BIOCHEMISTRY) programme under the Regulations 2016 and M.Sc. (BIOCHEMISTRY) under the Regulations 2016

RESOLVED that the courses having focus on employability/ entrepreneurship /skill development year wise in the syllabi of B.Sc. (BIOCHEMISTRY) programme under the Regulations 2016 and M.Sc. (BIOCHEMISTRY) under the Regulations 2016 to be approved.

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7.6 Reviewed and considered the curriculum feedback analysis and action taken report based on the suggestions given by the stake holders.

Resolved that the curriculum feedback analysis and action taken report based on the suggestions given by the stake holders to be approved. (Appendix – I)

Date: 19.09.2019

Chairman

Head of the Department
Biochemistry
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DEPARTMENT OF BIOCHEMISTRY

Appendix – I

Program	Stakeholder	Feedback	Recommendation	Actiontaken
BIOCHEMISTRY	Students	It was observedthatstudents stillrequired fewcompetentskillstofacethe industry.	New Teachingpedagogyneeds to beincorporated.	Studentswereaskedtopresentseminar on certaintopics & activitieslike groupdiscussion/quizzeswereincluded
	Teachers	InternalAssessment practicesneed moreimprovement to streamlinethe curriculumtaught(es specially during Firstyear).	Moreassessmentpracticesneedsto be conducted(apart fromregularones).	Continuousassessment tests&ModelExamswereconductedtoenhance the follow-up ofconceptstaught. Alongwiththisonlineassessmentwere also conducted.
	Alumni	Improvementson use ofonline toolsweresuggested	Facultieswereinsistedtousemore ICTenabledteachingmethods and materials likeNPTEL	Facultiesweresuggested to adoptforICTteachingmethods like PPT,online quiz,YouTubevideosetc

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DEPARTMENT OF BIOCHEMISTRY

Appendix – I

Program	Stakeholder	Feedback	Recommendation	Actiontaken
BIOCHEMISTRY	Students	It was observedthatstudents stillrequired few competentskillstofacetheindustry.	New Teachingpedagogyneeds to beincorporated.	Studentswereasked topresentseminar on certaintopics & activitieslike group discussion/quizzes wereincluded
	Teachers	InternalAssessmentpracticesneedmoreimprovementto streamlinethe curriculumtaught(especiallyduring First year).	Moreassessmentpracticesneedsto be conducted(apart fromregularones).	Continuousassessment tests &ModelExamswereconductedtoenhance the follow-up of conceptstaught. Alongwiththisonlineassessmentwere also conducted.
	Alumni	Improvements on use ofonline toolsweresuggested	Facultieswereinsistedtousemore ICT enabledteachingmethods and materials like NPTEL	Facultiesweresuggested to adoptforICTteachingmethods like PPT,online quiz, YouTubevideosetc

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MINUTES OF THE 7th MEETING OF THE BOARD OF STUDIES IN

BIOCHEMISTRY

Held on 20.02.2020
Members Present

S.No	Name	Designation	Member	Signature
1.	Dr. N. Radhakrishnan	Professor& Head	Chairman	
2.	Dr. P. Vasantha Srinivasan	Professor & Head	Internal Member	
3.	Ms.BV.Febiyola	Assistant Professor	Internal Member	
4	Dr. A. Suresh Kumar	Scientist, Biochemistry & Biotech Division CSIR-CLRI, Chennai	External Member	
5	Dr. G. Sriram Prasath	Assistant Professor, Department of Biochemistry	External Member	

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Chairman
Head of the Department
Biochemistry
St. Peter's Institute of Higher Education & Research
Avadi, Chennai - 600 054.

7.1 Considered the minutes of the 6th meeting of Board of Studies in BIOCHEMISTRY held on 19.09.2019.

RESOLVED that the minutes of the 7th meeting of Board of Studies in BIOCHEMISTRY held on 19.09.2019 be confirmed

7.2 Considered the new Regulations and syllabi of I & II semesters of B.Sc. (BIOCHEMISTRY) from the batch of students to be admitted from 2020-21 under the Regulations 2020 with Choice Based Credit System (CBCS).

RESOLVED that the new regulations and syllabi of I & II semesters of B.Sc. (BIOCHEMISTRY) with course outcomes from the batch of students to be admitted from 2020-21 under the Regulations 2020 with Choice Based Credit System (CBCS) be approved.

1. ACYT1609- Chemistry - II
2. ACYT1607- Chemistry -I

(Appendix - I)

7.3 Considered the new Regulations and syllabi of I & II semesters of M.Sc. (BIOCHEMISTRY) from the batch of students to be admitted from 2020-21 under the Regulations 2020 with Choice Based Credit System (CBCS).

RESOLVED that the new regulations and syllabi of I & II semesters of M.Sc. (BIOCHEMISTRY) with course outcomes from the batch of students to be admitted from 2020-21 under the Regulations 2020 with Choice Based Credit System (CBCS) be approved.(Appendix -II)

Date: 20.02.2020

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Head of the Department
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DEPARTMENT OF BIOCHEMISTRY

Appendix – I

B.Sc BIOCHEMISTRY- I Semester

Code No.	Course Title	L	T	P	Credit	Marks		
						CA	EA	Total
ATLT16--/ AHIT16--/ ATET16--/ AFRT16--	Language – I* (Tamil/Hindi/Telugu/French)	5	0	0	4	40	60	100
AENT1638	English – I	5	0	0	4	40	60	100
AENT1642	English For Communication	3	0	0	2	40	60	100
ACYT16-	Allied –I**	5	0	0	4	40	60	100
ABYT1601	Introduction to Biochemistry	5	0	0	4	40	60	100
ACYL16-	Allied –I Lab	0	0	4	2	40	60	100
ABYL1601	Introduction to Biochemistry Lab	0	0	4	2	40	60	100
Total		23	2	8	22	280	420	700

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OVERALL PERCENTAGE OF SYLLABUS REVISION FOR B.SC 39% FOR THE ACADAMEIC YEAR 2020- 2021

II Semester

Code No.	Course Title	L	T	P	Credit	Marks		
						CA	EA	Total
ATLT16--/ AHIT16--/ ATET16--/AFRT16--	*Language – II (Tamil/Hindi/Telugu/French)	5	0	0	4	40	60	100
AENT1639	English – II	5	0	0	4	40	60	100
ACYT16--	**Allied –II	5	0	0	4	40	60	100
AEVT1601	Environmental Science	2	0	0	2	40	60	100
ABYT1602	Cell Biology	5	0	0	4	40	60	100
ACYL16-	Allied –II Lab	0	0	4	2	40	60	100
ABYL1602	Cell Biology Lab	0	0	4	2	40	60	100
ASSL1601	Soft Skills – I	2	0	0	1	-	100	100
ASSI1601	Internship-I	0	0	2	1	-	100	100
Total		22	2	10	24	280	620	900

M.Sc Biochemistry- I Semester

Code No.	Course Title	L	T	P	Credit	Marks		
						CA	EA	Total
ABYT1901	Structure and Function of Biomolecules	5	0	0	4	40	60	100
ABYT1902	Analytical Biochemistry	5	0	0	4	40	60	100
ABYT190-	**Institute Core- I***	5	0	0	4	40	60	100
ABYT190-	**Program Elective- I****	5	0	0	4	40	60	100
ABYL1901	Biomolecules Lab	0	0	4	2	40	60	100
ABYL1902	Analytical Biochemistry Lab	0	0	4	2	40	60	100
	Total	**20**	**0**	**8**	**20**	**240**	**360**	**600**

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M.Sc Biochemistry- II Semester

Code No.	Course Title	L	T	P	Credit	Marks		
						CA	EA	Total
ABYT1909	Enzyme and Enzyme technology	5	0	0	4	40	60	100
ABYT1910	Intermediary metabolism	5	0	0	4	40	60	100
ABTT1911	**Open Elective- I***	5	0	0	4	40	60	100
ABYT1912	**Program Elective- II** **Cellular Biochemistry**	5	0	0	4	40	60	100
ABYL1909	Enzyme and Enzyme technology Lab	0	0	4	2	40	60	100
ASSL1901	Soft skills – I	2	0	0	1	-	100	100
ASSI1901	Internship – I/Mini-project	0	0	4	3	40	60	100
Total		**22**	**0**	**8**	**22**	**200**	**400**	**600**

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DEPARTMENT OF BIOCHEMISTRY
B.Sc BIOCHEMISTRY

Appendix – I

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Chemistry -I

UNIT 1: NUCLEAR CHEMISTRY **12**

Fundamental particles of nucleus, isobars, isotones and isomers – Differences between chemical reactions; fusion and fission – Radioactive series, group displacement law – Mass defect, derivation of 1amu = 931 MeV – nuclear binding energy and calculation – Applications of radio isotopes – carbon dating, and medicinal applications.

UNIT 2: INDUSTRIAL CHEMISTRY **12**

Fuels- Classification-gaseous fuels like water gas, producer gas, liquefied petroleum gas, gobar gas, compressed natural gas - Fertilizers- Classification – urea ,ammonium sulphate, superphosphate, triple super phosphate, potassium nitrate- manufacture and uses - Silicones - Preparation, properties and applications. Hardness of water: temporary and permanent hardness, disadvantages of hard water - Softening of hard water - zeolite process, demineralization process and reverse osmosis - Purification of water for domestic use: use of chlorine, Ozone and UV light - Definition and determinations of BOD and COD.

UNIT 3: FUNDAMENTALS OF ORGANIC CHEMISTRY **12**

Classification of organic compounds -Hybridization in methane, ethane, acetylene, benzene - classification of reagents - electrophiles, nucleophiles and free radicals - Classification of reactions addition, substitution, elimination, condensation and polymerization - Polar Effects - Inductive effect, resonance, hyper-conjugation, steric effect - Keto-enol tautomerism - electrophilic substitution mechanism in benzene (Nitration and Sulphonation) – Heterocyclic compounds - Preparation, properties and uses of furan, Thiophene, pyrrole and pyridine

UNIT 4: THERMODYNAMICS **12**

Definition of Certain terms - system, surrounding, reversible and irreversible process- Limitations of I Law Need for II Law - Different Statements of II. Law - Carnot cycle - Efficiency - Carnot Theorem - Thermodynamic Scale of Temperature - Entropy- Definition, unit and change of entropy for phase transformation -Free energy nature of Process in terms of Free energy and entropy-Statement of Third Law.

UNIT 5: CHEMICAL KINETICS **12**

Rate of chemical reaction- Differential rate expression - order and molecularity - Integrated rate expression for first, second, and zero order reactions - Half-life period— Effect of temperature on rate - Activation energy . Arrhenius equation - Arrhenius reaction rate theory- homogeneous and heterogeneous catalysis.

Photochemistry - Statement of Grothuss - Draper Law, Stark-Einstein's Law, Quantum Yield. Hydrogenchlorine reaction (elementary idea only) Photosynthesis, Photosensitization, Phosphorescence Fluorescence, Chemiluminescence - Definition with examples.

TOTAL HOURS : 60

REFERENCE BOOKS

1. Morrison, R. N. & Boyd, R. N," Organic Chemistry", Dorling Kindersley (India) Pvt. Ltd,Pearson Education,2016
2. Dr.Veeraiyan V., "Text book of Ancillary Chemistry", High mount Publishing house, 2008.
3. Vaithyanathan S. "Text book of Ancillary Chemistry", Priya Publications,2006.
4. Puri B.R., Sharma and Pathania, "Text book of Physical Chemistry", Vishal Publishing Co., NewDelhi.2017.

Dara S.S., "Text book of Environmental Chemistry and Pollution Control", S.Chand and Co.,NewDelhl, 2014.

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Chemistry II

UNIT 1: CO-ORDINATION CHEMISTRY **12**

Definition of terms - Classification of Ligands - Nomenclature - Chelation - EDTA and the application – Werner's Theory - Effective Atomic Number - Pauling's theory- Postulates - Applications to $Ni(CO)_4$,$Ni(CN)_4$ -Merits and Demerits of Werner's and Pauling's theory - Biological Role of haemoglobin and Chlorophyll (elementary idea only) - Applications of co-ordination compounds in qualitative analysis and quantitative analysis like Separation of copper and cadmium ions- Nickel and cobalt ion- Identification of metal ions like Cu, Fe and Ni. Estimation of Ni using DMG and Al using Oxine.

UNIT 2: BIOMOLECULES **12**

Classification, preparation and reactions of glucose and fructose. Discussion of open and ring structure of glucose. Mutarotation. Interconversion of glucose to fructose and vice versa - Preparation and properties of sucrose. Properties of starch, cellulose and derivatives of cellulose - Diabetes - causes and control measures RNA and DNA (elementary idea only)

Amino acids: Classification, preparation and properties of alanine -preparation of dipeptide using Bergman method.

UNIT 3: PHASE DIAGRAM **12**

Phase rule: Definition of terms, application of phase rule to water system - reduced phase rule and its application to Pb-Ag system. Freezing mixture - Completely miscible and partially miscible liquid systems - upper and lower critical solution temperatures

UNIT 4: ELECTROCHEMISTRY **12**

Galvanic cells – emf - standard electrode potential - reference electrodes –electrochemical series and its applications - Determination of pH using electrometric method - Electroplating process -Nickel and Chrome plating - Different type of cells - Primary cell, Secondary cell and fuel cells -Corrosion and methods of prevention, Conductometric titrations. Buffer solution - Henderson's equation. Applications of pH and buffer in biological process and industries - Corrosion and its prevention.

UNIT 5: ANALYTICAL CHEMISTRY **12**

Introduction to Qualitative and Quantitative Analysis - Principle of volumetric analysis - Separation techniques - Extraction - Distillation - Crystallization— Chromatographic separations - Principles and applications of column , paper, thin layer and gas-liquid Chromatography

TOTAL HOURS: 60

REFERENCE BOOKS

1. Skoog, D.A. Holler F.J. &Nieman, T.A. "Principles of Instrumental Analysis", Saunders College Pub., 2006.
2. Dr.Veeraiyan V., "Text book of Ancillary Chemistry", Highmount Publishing house, 2008.
3. Vaithyanathan S. "Text book of Ancillary Chemistry", Priya Publications,2006.
4. Morrison, R. N. & Boyd, R. N," Organic Chemistry", 6th Edn., Dorling Kindersley (India) Pvt. Ltd., Pearson Education,2016
5. Puri B.R., Sharma and Pathania, "Text book of Physical Chemistry", Vishal Publishing Co., New Delhi.2017.
6. Purcell, K.F &Kotz, J.C. "Inorganic Chemistry", W.B. Saunders Co, 2012

COURSE OUTCOMES

Upon completion of course the learner will be able to:

CO1: Synthesize inorganic complexes of valuable properties.

CO2: Gain knowledge in chemistry of Biomolecules.

CO3: Apply skill learnt in the field of Phase rule and Electrochemistry.

CO4: Execute analytical techniques for the separation and purification of compounds.

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Appendix – II

Course Code:	Course Title:
	L T P C
ABYT1907	Biology of Infectious Diseases
5 0 0 4	

Course Objectives:

1. To enable the learner to understand the important of infectious diseases which are highly prevalent in tropical countries.
2. To enable the learner to understand the significance of hygiene, sanitation, vaccination in prevention of infectious diseases.

Unit I Bacterial diseases
No. of Hours: 12

Bacterial diseases: classification of bacterial pathogens, virulence factors and host pathogen interaction. Bacterial toxins, enterotoxins and their mode of action, diarrhoea, cholera; Tuberculosis, infection and pathogenicity, diagnostics, therapeutics and vaccines, drug resistance. Other bacterial diseases such as - Typhoid, Diphtheria, Pertussis, Tetanus, Botulism Anthrax and Pneumonia; their virulence factors and host pathogen interactions.

Unit II Parasitic diseases
No. of Hours: 12

Parasitic diseases: Classes of parasites and diseases caused by them, Malaria: causative agents, vectors, etiology, diagnostics, drugs, vaccine development. Leishmaniasis and Amoebiasis, Giardiasis and Trypanosoma infections.

Unit III Fungal diseases
No. of Hours: 12

Fungal diseases: Etiology, characteristics and diagnosis of Candidiasis, Sporotrichosis, Aspergillosis and Ring worm. Role of drugs, vaccines and sanitation in prevention and treatment of infectious diseases.

Unit IV Viral diseases
No. of Hours: 12

Viral diseases: Structure and classification of viruses, viral virulence factors, host pathogen interactions; AIDS: history, causative agent, pathogenesis, diagnostics, drugs; other viral diseases such as Hepatitis, Influenza, Rabies, Dengue and Polio; Chicken Pox, Herpes Virus.

Unit V Infectious diseases
No. of Hours: 12

Infectious diseases: Classification, Nosocomial infections; Past and present emerging and re-emerging infectious diseases and pathogens. Source, reservoir and transmission of pathogens. Safety measures when working with pathogens, biosafety levels, infection and evasion.

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TOTAL HOURS :60

Suggested readings:

1. Jawetz, Melnick and Adelbergs Medical Microbiology 27th ed., McGraw Hill Education.
2. Klien's Microbiology, 7th edition. Prescott, Harley, Wiley, J.M., Sherwood, L.M., Woolverton, C.J. McGraw Hill International Edition (New York), 2008.
3. Sherris Medical Microbiology: An introduction to infectious diseases (2010) Kenneth J. Ryan, C., George Ray, Publisher: McGraw-Hill, (New York), 2010.

Expected Course Outcomes:

On the successful completion of the course, students will be able to

CO1: Understand the various classes of microbial infectious agents, their mode of action, biology of the diseases, transmission of diseases, the concepts of treatment, and drug resistance for various antimicrobial agents.

CO2: Understand the important of infectious diseases such as tuberculosis, AIDS, malaria, filariasis, etc. which are highly prevalent in tropical countries.

CO3: Understand the significance of hygiene, sanitation, vaccination in prevention of infectious diseases.

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Appendix – III

Program	Stakeholder	Feedback	Recommendation	Action taken
BIOCHEMISTRY	Students	It was observed that students still required few competent skills to face the industry.	New Teaching pedagogy needs to be incorporated.	Students were asked to present seminar on certain topics & activities like group discussion/quizzes were included
	Teachers	Internal Assessment practices need more improvement to streamline the curriculum taught (especially during First year).	More assessment practices needs to be conducted (apart from regular ones).	Continuous assessment tests & Model Exams were conducted to enhance the follow-up of concepts taught. Along with this online assessment were also conducted.
	Alumni	Improvements on use of online tools were suggested	Faculties were insisted to use more ICT enabled teaching methods and materials like NPTEL	Faculties were suggested to adopt for ICT teaching methods like PPT, online quiz, YouTube videos etc

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MINUTES OF THE 9 th MEETING OF THE BOARD OF STUDIES IN

BIOCHEMISTRY

Held on 26.02.2021

Members Present

S.No	Name	Designation	Member	Signature
1.	Dr. N. Radhakrishnan	Professor& Head	Chairman	
2.	Dr. P. Vasantha Srinivasan	Professor & Head	Internal Member	
3.	Ms.BV.Febiyola	Assistant Professor	Internal Member	
4.	Dr. A. Suresh Kumar	Scientist, Biochemistry & Biotech Division CSIR-CLRI, Chennai	External Member	
5.	Dr J. Selvaraj	Scientist E Meenakshi Ammal Dental College, MAHER	External Member	

Chairman

Registrar
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Head of the Department
Biochemistry
St. Peter's Institute of Higher Education & Research
Avadi, Chennai - 600 054.

9.1 Considered the minutes of the th meeting of Board of Studies in BIOCHEMISTRY held on 11.09.2020

RESOLVED that the minutes of the 9th meeting of Board of Studies in BIOCHEMISTRY held on 11.09.2020 be confirmed

9.2 Reviewed the Regulation & Syllabi of III & IV of B.Sc. BIOCHEMISTRY programme under the Regulations 2020 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation & Syllabi of III & IV of B.Sc. BIOCHEMISTRY programme under the Regulations 2020 with Choice Based Credit System (CBCS) be continued (Appendix I)

9.3 Reviewed the Regulation & Syllabi of III & IV of M.Sc. BIOCHEMISTRY programme under the Regulations 2020 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation & Syllabi of III & IV of M.Sc. BIOCHEMISTRY programme under the Regulations 2020 with Choice Based Credit System (CBCS) be continued. (Appendix - II)

9.4 Considered to include value added courses imparting transferable and life skills offered beyond the curriculum in the syllabi of B.Sc. (BIOCHEMISTRY) and M.Sc. (BIOCHEMISTRY).

RESOLVED that the value added courses imparting transferable and life skills offered beyond the curriculum such as course on "Effects of global warming" be approved for the upcoming semester (2021-2022– Odd semester).

9.5 Considered to include courses having focus on employability/ entrepreneurship /skill development in the syllabi of B.Sc. (BIOCHEMISTRY) under the Regulations 2020 and M.Sc. (BIOCHEMISTRY) under the Regulations 2020

RESOLVED that the courses having focus on employability/ entrepreneurship /skill development year wise in the syllabi of B.Sc. (BIOCHEMISTRY) under the Regulations 2020 and M.Sc. (BIOCHEMISTRY) under the Regulations 2020 to be approved.

Date: 26.02.2021

Chairman

Registrar
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Avadi, Chennai-600 054

Head of the Department
Biochemistry
St. Peter's Institute of Higher Education & Research
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DEPARTMENT OF BIOCHEMISTRY

Appendix – I

B.Sc BIOCHEMISTRY- III SEMESTER

Code No.	Course Title	L	T	P	Credit	Marks		
						CA	EA	Total
ATLT26--/ AHIT26--/ ATET26--/ AFRT26--	Language - III * (Tamil/Hindi/Telugu/French)	5	0	0	4	40	60	100
AENT2640-	English – III	5	0	0	4	40	60	100
AMYT26- ABTT26- ABYT26-	Allied–III**	5	0	0	4	40	60	100
ABYT2601	Biochemical Techniques	5	0	0	4	40	60	100
AMYL26- ABTL26- ABYL26-	Allied Lab–III	0	0	4	2	40	60	100
ABYL2601	Biochemical Techniques Lab	0	0	4	2	40	60	100
ASSL2602	Soft Skills – II	2	0	0	1	-	100	100
Total		20	2	10	21	240	460	700

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B.Sc BIOCHEMISTRY- IV SEMESTER

Code No.	Course Title	L	T	P	Credit	Marks		
						CA	EA	Total
ATLT26--/ AHIT26--/ ATET26--/ AFRT26--	Language – IV * (Tamil/Hindi/Telugu/French)	5	0	0	4	40	60	100
AENT2641	English – IV	5	0	0	4	40	60	100
AMYT26- ABTT26- ABYT26-	Allied –IV**	5	0	0	4	40	60	100
ABYT2604	Biomolecules	5	0	0	4	40	60	100
AMYL26--	Allied Lab –IV	0	0	4	2	40	60	100
ABYL2604	Biomolecules Lab	0	0	4	2	40	60	100
ASSL2603	Soft Skills – III	2	0	0	1	0	100	100
ASSI2602	Mini Project /Internship –II#	0	0	2	1	0	100	100
Total		20	2	10	22	240	560	800

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M.Sc BIOCHEMISTRY -Semester III

Code No.	Course Title	L	T	P	Credit	Marks		
						CA	EA	Total
ABYT2901	Clinical Biochemistry	5	0	0	4	40	60	100
ABYT2902	Cell Signalling	5	1	0	6	40	60	100
ABYT2903	Molecular Biology	5	1	0	6	40	60	100
ABYT290-	**Institute Core-II***	5	1	0	6	40	60	100
ABYT290-	**Program Elective-III****	5	1	0	6	40	60	100
ABYL2901	Clinical Biochemistry Lab	0	0	4	2	40	60	100
ASSL2902	Soft skills – II	2	0	0	1	-	100	100
ASSI2901	Internship-II	0	0	4	2	-	100	100
Total		**27**	**3**	**8**	**33**	**240**	**560**	**800**

OVERALL PERCENTAGE OF SYLLABUS REVISION FOR M.Sc - 47.8%
FOR THE ACADEMIC YEAR

M.Sc BIOCHEMISTRY- IV SEMESTER

Code No.	Course Title	L	T	P	Credit	Marks		
						CA	EA	Total
ARMT2916	Research Methodology*	6	1	0	6	40	60	100
ABYP2901	Project Work	0	0	10	10	40	60	100
ASSL2903	Soft skills – III	2	0	0	1	-	100	100
Total		**8**	**1**	**10**	**17**	**80**	**220**	**300**

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AVADI, Chennai – 600054.TamilNadu.
Phone:044-26558080-84
E-mail:registrar@spiher.ac.in
Website:www.spiher.ac.in

NEW COURSES FOR THE ACADEMIC YEAR 2021-2022

B.Sc. - BIOCHEMISTRY

S.No	Programme Code	Programme Name	Course Code	Name of the Course
1	BCU	B.Sc. - Biochemistry	ABYT2601	BIOCHEMICAL TECHNIQUES
2	BCU	B.Sc. - Biochemistry	ABYL2601	BIOCHEMICAL TECHNIQUES LAB
3	BCU	B.Sc. - Biochemistry	AMYT2610	MICROBIOLOGY
4	BCU	B.Sc. - Biochemistry	AMYL2610	MICROBIOLOGY LAB
5	BCU	B.Sc. - Biochemistry	ASSL2602	SOFT SKILLS -II
6	BCU	B.Sc. - Biochemistry	ABYT2604	BIOMOLECULES
7	BCU	B.Sc. - Biochemistry	ABYL2604	BIOMOLECULES LAB
8	BCU	B.Sc. - Biochemistry	ABTT2620	PLANT BIOTECHNOLOGY
9	BCU	B.Sc. - Biochemistry	ABTL2620	PLANT BIOTECHNOLOGY LAB
10	BCU	B.Sc. - Biochemistry	ASSI2602	INTERNSHIP-II
11	BCU	B.Sc. - Biochemistry	ABTT2610	BIOTECHNOLOGY
12	BCU	B.Sc. - Biochemistry	AMYT2620	BIOLOGY OF INFECTIOUS DISEASE

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Website:www.spiher.ac.in

NEW COURSES FOR THE ACADEMIC YEAR 2021-2022

M.Sc. – BIOCHEMISTRY

S.No	Programme Code	Programme Name	Course Code	Name of the Course
1	BCP	M.Sc. - Biochemistry	ABYT2901	CLINICAL BIOCHEMISTRY
2	BCP	M.Sc. - Biochemistry	ABYT2902	CELL SIGNALLING
3	BCP	M.Sc. - Biochemistry	ABYT2903	MOLECULAR BIOLOGY
4	BCP	M.Sc. - Biochemistry	ABYT2906	BIOSTATISTICS AND BIOCHEMICAL TOXICOLOGY
5	BCP	M.Sc. - Biochemistry	ABYT2908	PHYSIOLOGY
6	BCP	M.Sc. - Biochemistry	ABYL2901	CLINICAL BIOCHEMISTRY LAB
7	BCP	M.Sc. - Biochemistry	ASSL2902	SOFT SKILLS – II
8	BCP	M.Sc. - Biochemistry	ARMT2916	RESEARCH METHODOLOGY
9	BCP	M.Sc. - Biochemistry	ABYT2909	IMMUNOLOGY
10	BCP	M.Sc. - Biochemistry	ABYT2904	BIOSTATISTICS AND DRUG DISCOVERY
11	BCP	M.Sc. - Biochemistry	ABYP2901	PROJECT WORK
12	BCP	M.Sc. - Biochemistry	ASSL2903	SOFT SKILLS – III

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MINUTES OF THE 10th MEETING OF THE BOARD OF STUDIES IN

BIOCHEMISTRY

Held on 20.10.2021

Members Present

S.No	Name	Designation	Member	Signature
1.	Dr. N. Radhakrishnan	Professor& Head	Chairman	
2.	Dr. P. Vasantha Srinivasan	Professor & Head	Internal Member	
3.	Ms.BV.Febiyola	Assistant Professor	Internal Member	
4.	Dr. A. Suresh Kumar	Scientist, Biochemistry & Biotech Division CSIR-CLRI, Chennai	External Member	
5.	Dr. Balu Ranganathan	Technology-Director, M/s Palms connect Solution Pvt. Ltd. Chennai.	External Member	

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Chairman
Head of the Dept.
Biochemistry
St. Peter's Institute of Higher Education & Research
Avadi, Chennai - 600 054.

11.1 Considered the minutes of the 9th meeting of Board of Studies in BIOCHEMISTRY held on 26.10.2021.

RESOLVED that the minutes of the 9th meeting of Board of Studies in BIOCHEMISTRY held on 26.10.2021 be confirmed

11.2 Reviewed the Regulation & Syllabi of B.Sc. BIOCHEMISTRY programme under the Regulations 2020 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation and Syllabi of B.Sc. (BIOCHEMISTRY) programmes under the Regulations 2020 with Choice Based Credit System (CBCS) be continued taking into consideration of the suggestions and remarks given by the members to include the following new elective course (Appendix – I)

1. ABTT2610- Biotechnology
2. ABYT2602- Nutritional Biochemistry

11.3 Reviewed the Regulation & Syllabi of M.Sc. BIOCHEMISTRY programme under the Regulations 2020 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation and Syllabi of M.Sc. (BIOCHEMISTRY) programmes under the Regulations 2020 with Choice Based Credit System (CBCS) be continued taking into consideration of the suggestions and remarks given by the members to include the new elective course "ABYT2909 – Immunology" (Appendix – II)

11.4 Reviewed the curricula developed having relevance to the local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes.

RESOLVED that the syllabi of B.Sc. (BIOCHEMISTRY) programme under the Regulations 2020 and M.Sc. (BIOCHEMISTRY) under the Regulations 2020 developed having relevance to the local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes be approved.

11.5 Reviewed and considered the curriculum feedback analysis and action taken report based on the suggestions given by the stake holders.

Resolved that the curriculum feedback analysis and action taken report based on the suggestions given by the stake holders to be approved. (Appendix – III)

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Date: 20.10.2021

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Chairman
Head of the Department
Biochemistry
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B.Sc BIOCHEMISTRY -APPENDIX – I

Course Objectives:

1. To enable the learner to understand the basic concept of nutrition, role of nutrients and dietaryrequirements of carbohydrates, proteins, fats, vitamins and minerals etc.
2. To enable the learner to understand the importance of essential amino acids, essential fatty acid and
   vitamins for the body.

Unit 1:Basic concepts of nutrition **No. Of Hours: 12**

Basic concepts of nutrition, Nutrients, function of nutrients. Measurement of the fuel values of foods. Basal metabolic rate: factors affecting BMR, measurement and calculation of BMR.

Unit 1I:Elements of nutrition **No. Of Hours: 12**

Elements of nutrition – Dietary requirement of carbohydrates, lipids and proteins. Balanced diet, Conceptof protein quality. Essential amino acids, essential fatty acids and their physiological functions.

Unit 1II:Minerals **No. Of Hours: 12**

Minerals – Nutritional significance of dietary calcium, phosphorus, magnesium, iron, iodine, zinc andcopper.

Unit 1V:Vitamins **No. Of Hours: 12**

Vitamins – Dietary sources, biochemical functions, requirements and deficiency diseases associated withvitamin B complex, C and A, D, E and K vitamins.

Unit V:Malnutrition **No. Of Hours: 12**

Malnutrition –Recommended dietary allowances, nutritive value of common foods. Protein-caloriemalnutrition. Obesity – Definition, Genetic and environmental factors leading to obesity.

TOTAL HOURS : 60

Suggested readings:

1. Swaminathan, Advanced Textbooks of food and Nutrition, Vol 1, 2, BAPPCO Press, 2005.
2. ViswanathSardesai, Introduction to Clinical nutrition, 3rd edition, 2011.
3. Geissler C, Powers H. Human Nutrition. Edinburgh: Elsevier Churchill Livingstone, 2010.
4. Devlin, T.M., Textbook of Biochemistry with Clinical Correlations, John Wiley & Sons, Inc.(New York), 2011.
5. Harper's Illustrated Biochemistry, Victor W. Rodwell,David Bender,Kathleen M. Botham, Peter J. Kennelly, P. Anthony Weil, (31st Edition), McGraw Hill Professional, 2018.

Fundamentals of Biochemistry, A. C. Deb., (9th edition), New Central Book Agency (P) Limited,2001.

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Course Objectives:

1. To enable the learner to gain basic knowledge of recombinant DNA technology and cloning techniques.
2. To enable the learner to understand the methods for production of proteins using recombinant DNA technology and their application in industrial systems.

Unit 1: Introduction to Biotechnology **No. Of Hours: 12**

Biotechnology: Definition and scope, types and branches of biotechnology. Recombinant DNA technology – Basic techniques – cutting and joining of DNA molecules, Methods of gene transfer - transfection, electroporation, Selection and screening of recombinants. Insertional inactivation. Role of enzymes - Restriction endo nucleases, DNA ligases, Reverse transcriptase, DNA polymerase. Use of Linkers and Adapters, homopolymer tailing, Synthetic oligonucleotides.

Unit 1I: Cloning vectors **No. Of Hours: 12**

Plasmids and bacteriophages as vectors for gene cloning. Cloning vectors based on E. coli plasmids, pBR322, pUC8, pGEM3Z. Viruses as vectors, cloning vectors based on M13 and λ bacteriophage. Cosmids and Yeast artificial vectors (YAC).

Unit 1II: Protein engineering **No. Of Hours: 12**

T4-lysozyme, Site–directed mutagenesis, yeast two hybrid systems, Production of recombinant pharmaceuticals such as insulin, human growth hormone, factor VIII. Recombinant vaccines.

Unit 1V: Plant genetic engineering **No. Of Hours: 12**

Gene isolation, gene transfer systems, Ti plasmid, plant virus vectors, electroporation, micro injection, micro projectile technology, gene expression, regeneration. Application in relation to protein quality, photosynthetic efficacy, nitrogen fixation efficiency and resistance to environmental stresses.

Unit V: Fermentation technology **No. Of Hours: 12**

Fermentors, general design of fermentor, fermentation processes, production of alcohols, antibiotics, steroids and enzymes.

TOTAL HOURS : 60

Suggested readings:

1. Sathyanarayana, Biotechnology, Books and allied Publishers, 3rd edition, 2006.
2. Dubey. R.C, Text book of Biotechnology, S. Chand & Co, 2009.
3. Gene Cloning and DNA Analysis, 6th ed., Brown, T.A., Wiley-Blackwell publishing (Oxford, UK), 2010.
4. Molecular Cloning: A laboratory manual, 4th ed., 3rd Volume, Michael R Green and J. Sambrook Cold spring Harbor laboratory press, 2014.

Expected Course Outcomes:

On the successful completion of the course, students will be able to

CO1: Understand the basic knowledge of recombinant DNA technology.

CO2: Understand the basic concept of cloning and expression vectors, creation of genomic and cDNA libraries and their applications.

CO3: Understand the methods for production of proteins using recombinant DNA technology and their application in industrial systems.

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M.Sc BIOCHEMISTRY -APPENDIX – II

616UBYT03 - CORE ELECTIVE PAPER – II - IMMUNOLOGY

UNIT-I

Types of immunity- innate and acquired. Humoral and cell mediated immunity. Immune system – functions and structural components – lymphoreticular system – lymphoid organs- primary and central lymphoid organs – structure and functions of lymphoid cells – types and functions of B, T and null cells. Role of phagocytes and mast cells.

UNIT-II

Antigens – definition – types – haptens, isoantigens, neoantigens. Factors affecting antigenicity and immunogenicity of antigens. Antibodies – definition and classification. General structure and functions of IgM, IgD, IgA, IgG and IgE, Isohemeagglutinins and natural antibodies. Clonal selection theory of antibody formation. Complement – biochemical functions. Activation by classical and alternative pathways.

UNIT-III

Antigen – antibody interaction – types – precipitation and agglutination mechanism. Applications of agglutination reaction in diagnosis of diseases – Vidal test – complement fixation test. Blood grouping- major and minor blood groups. Erythroblastosis fetalis, Blood transfusion. Mismatched blood transfusion and its consequences, Principle and applications of RIA and ELISA.

UNIT-IV

Immunization practices- passive and active immunization. Commonly used vaccines- killed and live attenuated. Vaccination schedule for children. Production of polyclonal and monoclonal antibodies- principle and applications.

UNIT-V

Disorders of immune system – hypersensitivity – causes, types and pathology of type I, II, III and IV hypersensitivity – Auto immunity – causes and the pathology of Rheumatoid arthritis, systemic lupus erythematosus, Hashimotos thyroiditis, thyrotoxicosis, autoimmune hemolytic anemia. Disorders of B-cells, T-cells and complement deficiency.

Books recommended

1. Judy Owen , Jenni Punt Kuby (2013) ,Immunology (Kindt, Kuby Immunology) (7 ed)
   W. H. Freeman & Co
2. Janis Kuby (1997),Immunology (3rd ed), W. H. Freeman & Co
3. David Male (2012) , Immunology, (Immunology (Roitt) (8th ed), Saunders
4. Ivan Roitt and Peter Delves (2001), Roitts Essential Immunology (10th ed)
5. Donald M. Weir (1998), Immunology (8th ed) , Churchill Livingstone

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Appendix – III

Program	Stakeholder	Feedback	Recommendation	Action taken
iotechnology	Students	It seems that students still requires more competent skills to face the industrial evaluation	Teaching and educational activities to be incorporated in future.	Students were asked to present PPT on the assured topics & activities like Role play were included
	Teachers	Evaluation practices require more improvement to streamline the curriculum taught.	Evaluation practices needs to be conducted more in future.	Continuous assessment tests & Model Exams were conducted to enhance the follow-up of concepts taught.
	Alumni	Upgrading on use of ICT methods were favoured.	Facultie were insisted to use more ICT enabled teaching methods.	Faculties were requested to opt for ICT teaching methods like PPTs presentation, online quiz.

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MINUTES OF THE 11th MEETING OF THE BOARD OF STUDIES IN

BIOCHEMISTRY

Held on 24.02.2022

Members Present

S.No	Name	Designation	Member	Signature
1.	Dr. N. Radhakrishnan	Professor& Head	Chairman	
2.	Dr. P. Vasantha Srinivasan	Professor & Head	Internal Member	
3.	Ms.BV.Febiyola	Assistant Professor	Internal Member	
4.	Dr. A. Suresh Kumar	Scientist, Biochemistry & Biotech Division CSIR-CLRI, Chennai	External Member	
5.	Dr. Balu Ranganathan	Technology-Director, M/s Palms connect Solution Pvt. Ltd. Chennai.	External Member	

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Avadi, Chennai-600 054

Chairman
Head of the Department
Biochemistry
St. Peter's Institute of Higher Education & Research
Avadi, Chennai - 600 054.

11.1 Considered the minutes of the 10th meeting of Board of Studies in BIOCHEMISTRY held on 20.10.2021

RESOLVED that the minutes of the 10th meeting of Board of Studies in BIOCHEMISTRY held on 20.10.2021 be confirmed

11.2 Reviewed the Regulation & Syllabi of V & VI of B.Sc. BIOCHEMISTRY programme under the Regulations 2020 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation & Syllabi of V & VI of B.Sc. BIOCHEMISTRY programme under the Regulations 2020 with Choice Based Credit System (CBCS) be continued (Appendix I)

11.3 Reviewed the Regulation & Syllabi of M.Sc. BIOCHEMISTRY programme under the Regulations 2020 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation & Syllabi of M.Sc. BIOCHEMISTRY programme under the Regulations 2020 with Choice Based Credit System (CBCS) be continued.

11.4 Considered to include value added courses imparting transferable and life skills offered beyond the curriculum in the syllabi of B.Sc. (BIOCHEMISTRY) and M.Sc. (BIOCHEMISTRY).

RESOLVED that the value added courses imparting transferable and life skills offered beyond the curriculum such as course on "Effects of global warming" be approved for the upcoming semester (2021-2022– Odd semester).

11.5 Considered to include courses having focus on employability/ entrepreneurship /skill development in the syllabi of B.Sc. (BIOCHEMISTRY) under the Regulations 2020 and M.Sc. (BIOCHEMISTRY) under the Regulations 2020

RESOLVED that the courses having focus on employability/ entrepreneurship /skill development year wise in the syllabi of B.Sc. (BIOCHEMISTRY) under the Regulations 2020 and M.Sc. (BIOCHEMISTRY) under the Regulations 2020 to be approved.

Date: 24.02.2022

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Chairman
Head of the Department
Biochemistry
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Avadi, Chennai - 600 054.

Appendix – I

St. Peter's Institute of Higher Education and Research
B. Sc. BIOCHEMISTRY

V Semester

Code No.	Course Title	L	T	P	Credit	Marks		
						CA	EA	Total
ABYT3601	Enzymology	5	0	0	4	40	60	100
ABYT36-	Program Elective – I*	5	0	0	4	40	60	100
ABYT36-	Program Elective –II**	5	0	0	6	40	60	100
----------	Institute Elective –I♯	4	0	0	3	40	60	100
ABYL3601	Enzymology Lab	0	0	4	2	40	60	100
ABYL36-	Program Elective – I (Lab)	0	0	4	2	40	60	100
ASSL3604	Soft Skills – IV	2	0	0	1	-	100	100
ASSI3603	Internship – III	0	0	2	1	-	100	100
Total		19	3	10	23	240	560	800

VI Semester

Code No.	Course Title	L	T	P	Credit	Marks		
						CA	EA	Total
ABYT3608	Clinical Biochemistry	5	0	0	4	40	60	100
ABYT36_	Program Elective – III*	5	0	0	6	40	60	100
----------	Institute Elective –II**	4	0	0	3	40	60	100
ABYL3608	Clinical Biochemistry Lab	0	0	4	2	40	60	100
ABYP3601	Project Work	0	0	8	8	40	60	100
ASSL3605	Soft Skills – V	2	0	0	1	-	100	100
AEAL3601	Extension Activity	0	0	2	1	-	100	100
Total		14	1	15	25	200	500	700

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