DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

CIRCULAR NO.ACAD/NP/B.Sc.-Ist Yr./SEM.-I & II/173/2013

It is hereby notified for information of all concerned that, on the recommendations of the Board of Studies/Ad-hoc Boards/ Committee under the Faculty of Science, the Hon'ble Vice-Chancellor has accepted the **following revised syllabi for B.Sc. First Year progressively and Syllabus of B.Sc. Textile and Interior Decoration, Semester-V & VI** on behalf of the **Academic Council Under Section-14(7) of the Maharashtra Universities Act, 1994** ***as appended herewith.***

Sr. No.	*Revised Syllabus*	
[1]	*B.Sc. [Instrumentation Practice]*	*Semester- I & II,*
[2]	*B.Sc. [Forensic Science]*	*Semester- I & II,*
[3]	*B.Sc. [Bio-Chemistry]*	*Semester- I & II,*
[4]	*B.Sc. [Networking & Multimedia]*	*Semester- I & II,*
[5]	*B.Sc. [Agro Chemical Fertilizer]*	*Semester- I & II,*
[6]	*B.Sc. [Analytical Chemistry]*	*Semester- I & II,*
[7]	*B.Sc. [Polymer Chemistry]*	*Semester- I & II,*
[8]	*B.Sc. [Environmental Science]*	*Semester- I & II,*
[9]	*B.Sc. [Textile & Interior Decoration]*	*Semester- V & VI,*

This is effective from the **Academic Year 2013-2014** and onwards.

These **syllabi are available on the University Website www.bamu.net**

All concerned are requested to note the contents of this circular and bring the notice to the students, teachers and staff for their information and necessary action.

University Campus,
Aurangabad-431 004.
REF.NO.ACAD/NP/B.SC.-IST YEAR/
Sem-I & II/2013/10191-640
V.C.14[7] A-03.

Date:- 03-06-2013.

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S.B.Kamble
Director,
Board of College and University Development.

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Copy forwarded with compliments to :-

1] **The Principals, affiliated concerned Colleges,**
Dr. Babasaheb Ambedkar Marathwada University.

2] The Director, University Network & Information Centre, UNIC, with **a request to upload the above all syllabi on University Website [www.bamu.net].**

Copy to :-

1] The Controller of Examinations,

2] The Superintendent, [B.Sc. Unit],

3] The Superintendent, [Eligibility Unit],

4] The Programmer [Computer Unit-1] Examinations,

5] The Programmer [Computer Unit-2] Examinations,

6] The Director, [E-Suvidha Kendra], in-front of Registrar's Quarter,
Dr. Babasaheb Ambedkar Marathwada University,

7] The Public Relation Officer,

8] The Record Keeper,
Dr. Babasaheb Ambedkar Marathwada University.

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DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD.

Revised Syllabus of

B.Sc. I Year

Biochemistry

Semester-I & II

[Effective from -2013-2014 & onwards]

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

Syllabus of B.Sc. Bio-Chemistry

Semester-I

PAPER-I *BIOMOLECULES-I* **Marks : 50**

Introduction:

I) History and Development of Biochemistry.

II) Composition of living matter, importance of carbon, origin of life.

III) Prokaryotic and Eukaryotic cells, Structure of Orangelles, Structure and Functions.

IV) **Carbohydrates :** Definition, biological role and Classification of carbohydrates, Structure of monosaccharides, Stereoisomerism and optical isomerism of sugars, ring structures and anomeric forms, mutarotation, Reactions of aldehyde and Ketone groups reactions due to hydroxyl groups. Structure, occurrence and biological importance of monosaccharides, (glucose, fructose, galactose) disaccharides (Sucrose, maltose, lactose) and polysaccharides (Cellulose, glycogen, starch) and chitin, agar, pectin, proteoglycans, sialic acids, blood group polysaccharides.

V) **Lipids :** Definition, fatty acids nomenclature, structure. Classification of lipids; simple, complex & derived lipids. Physical properties and Chemical Properties hydrolysis, saponification, rancidity of fats, reaction of glycerol. Biological significance of fats. Properties and functions of sterols.

PAPER-II *BIOMOLECULES-II* **Marks : 50**

I) Amino Acids:- Common Structural features, Sterio-Isomerism, Classification and Structures of standard amino acids, amino acids as zwitterions, physical and chemical properties, titration of amino acids.

II) Peptides; Structure of peptide bond, Structure & functions of Oxytocin & Vasopressin.

III) Proteins: Introduction, Composition. Protein structure, Levels of Structure; Primary, Secondary-helix and pleated sheets, Tertiary-forces stabilizing tertiary structure and quaternary structure of protein.

Classification: Simple, conjugated & derived proteins, Physico-chemical properties-IpH, denaturation, salting out & salting in, hydrolysis & color reactions of proteins due to side-chain. Biological functions of proteins.

IV) Nucleic Acids : Composition of DNA and RNA, occurrence & types of nucleic acids, generalized structural plan of nucleic acids, Chemistry of nucleotides features of DNA double helix. Denaturation of DNA, structure and roles of different types of RNA (m-RNA, t-RNA & r-RNA) DNA & RNA Viuses.

PAPER-III :

[based on Paper- I & II]

Marks : 50

1) Carbohydrates : Tests : Glucose, fraetose, sucrose, starch, Identification of Unknown sugar.
2) Amino acids & Proteins- Albumin, Caesin, etc.
3) Lipids : General tests and glycerol
4) Determination of saponification value
5) Iodince no. of fats.
6) Estimation of carbohydrates-Hanes method

Semester-II

PAPER-IV : ENZYMES **Marks : 50**

i) Introduction : History general characteristics, nomenclature, IUB enzyme classification with examples. Minimum 2 examples

ii) Holoenzyme, apoenzymes, coenzymes, cofactor, activators, inhibitors, active site (identification of groups excluded) metalloenzymes, units of enzyme activity, specific enzymes.

iii) Isoenzymes, monomeric enzymes, oligomeric enzymes and multi-enzyme complexes, Enzyme specificity.

iv) Measurement and expression of enzyme activity-enzyme assays. Definitionof IU, enzyme turn over number and specific activity. Coenzyme, prosthetic groups.

v) Enzyme catalysis & Coenzymes : Role of cofactors in enzyme catalysis. NAD/NADP FMN/FAD, coenzyme A, biocytin, cobamide, lipoamide, TPP, pyridoxal phosphate, tetrahydrofolate and metal ions with special emphasis on coenzyme functions.

vi) Enzyme Kinetics : Factors affecting enzyme activity : enzyme concentration, substrate concentration, pH and temperature.

vii) Derivation of Michaelis-Menten equation for uni-substrate reactions,Km and its significance, Line weaver-Burk plot and its limitations. Importance of Kcat/Km. Bi-substrate reactions-brief introduction to sequential and ping-pong mechanisms with examples. Kintics of Zero and first order reactions.

viii) Significance and evaluation of energy of activation and free energy.

ix) Reversible and irreversible inhibition, competitive, non-competitive and uncompetitive ihibilitions, determination of Km and Vmax in presence and absence of inhibitor.

x) Allosteric enzymes.

Semester-II

PAPER-V : *BIOCHEMICAL TECHNIQUES-I*

II) Chromatography: General Principles working and applications of

a) Adsorption chromatography

b) Ion exchange chromatography

c) Thin layer chromatography

d) Molecular sieve chromatography

e) Gas liquid chromatography

f) Affinity chromatography

g) Paper chromatography

II) Electrophoresis:

Principle, factors, Tiselius apparatas, Continuous and discontinuous, paper, gel, immunolectrophoresis, PAGE and SDS-PAGE, Two dimensional electrophoresis, its importance, isoelectrfocussing.

III) Spectroscopic Techniques

Beer-Lambert law, light absorption and its transmittance, determination and application of extinction coefficient, application of visible and UV spectroscopic techniques, Fluorescent and emission spectroscopy techniques, Fluorescent and emission spectroscopy.

PAPER-VI :

[based on Paper- IV & V] **Marks : 50**

1) Determination of pH of solutions
2) Titration curve for amino acids and dtermination of pK value
3) Estimation of Ascorbic acid
4) Estimation of amino acids by Sorenson-formal titration
5) Verification of Lambert Beer's law and its limitations
6) Extraction of lipids by Folch method
7) Tests of food adultrants.

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