डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

परिपत्रक क्रमांक/एस.यु./विज्ञान/अभ्यासक्र-I/७४/२०१४

या परिपत्रकाद्वारे सर्व संबंधीतांना सुचित करण्यात येते की, विज्ञान विद्याशाखेने शिफारस केल्यानुसार बी. एस्सी. / एम. एस्सी. प्रथम व द्वितीय वर्षाच्या सुधारित अभ्यासक्रमास आणि बी. एस्सी. प्रथम वर्षाच्या अभ्यासक्रमात किरकोळ बदल करण्यास विद्यापरिषदेच्या वतीने मा. कुलगुरु यांनी, त्यांना प्राप्त असलेल्या विशेष अधिकार महाराष्ट्र विद्यापीठ अधिनियम-१९९४ कलम १४(७) अन्वये मान्यता दिलेली आहे. त्या अनुषंगाने सुधारीत तयार केलेल्या अभ्यासक्रमाची प्रत या परिपत्रकासोबत आपल्या पुढील कार्यवाहीसाठी पाठविण्यात येत आहे.

[1]	B.Sc. Physics	Semester-III & IV,
[2]	B.Sc. Chemistry	Semester-III & IV,
[3]	B.Sc. Botany	Semester-III & IV,
[4]	B.Sc. Zoology with minor changes	Semester-I & II,
[5]	B.Sc. Zoology	Semester-III & IV,
[6]	B.Sc. Fisheries	Semester-III & IV,
[7]	B.Sc. Electronics (Opt.)	Semester-III & IV,
[8]	B.A./B.Sc. Mathematics	Semester-III & IV,
[9]	B.Sc. Computer Science	Semester-I & II,
[10]	B.Sc. Information Technology	Semester-I & II,
[11]	B.C.A.	Semester-I & II,
[12]	B.Sc. Computer Science(Opt.)	Semester-I & II,
[13]	B.Sc. Information Technology(Opt.)	Semester-I & II,
[14]	B.Sc. Computer Application(Opt.)	Semester-I & II,
[15]	B.Sc. Computer Maintenance(Opt.)	Semester-I & II,
[16]	B.Sc. Biotechnology (Progressively)	Semester-I to VI,
[17]	B.Sc. Biotechnology (Opt.) (Progressively)	Semester-I to IV,
[18]	B.Sc. Sericulture Technology	Semester-I & II,
[19]	B.Sc. Networking Multimedia	Semester-III & IV,
[20]	B.Sc. Bioinformatics	Semester-I & II,
[21]	B.Sc. Hardware & Networking	Semester-I & II,
[22]	B.Sc. Animation	Semester-I & II,
[23]	B.Sc. Dairy Science & Technology	Semester-III & IV,
[24]	B.Sc. Biochemistry	Semester-III & IV,
[25]	B.Sc. Analytical Chemistry	Semester-III & IV,
[26]	B.Sc. Textile & Int. Decoration with minor changes	Semester-I & II,
[27]	B.Sc. Textile & Int. Decoration	Semester-III & IV,
[28]	B.Sc. Home Science with minor changes	Semester-I & II,
[29]	B.Sc. Home Science	Semester-III & IV,
[30]	B.Sc. Agro.Chem. & Fertilizers	Semester-III & IV,

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[31]	B.Sc. Geology	Semester-III & IV,
[32]	B.A. Statistics with minor changes	Semester-I & II,
[33]	B.A. Statistics	Semester-III & IV,
[34]	B.Sc. Statistics with minor changes	Semester-I & II,
[35]	B.Sc. Statistics	Semester-III & IV,
[36]	B.Sc. Industrial Chemistry	Semester-III & IV,
[37]	B.Sc. Horticultural	Semester-I & II,
[38]	B.Sc. Dry land Agriculture	Semester-I & II,
[39]	B.Sc. Microbiology	Semester-III & IV,
[40]	M.Sc. Computer Science	Semester-I to IV,
[41]	M.Sc. Information Technology	Semester-I to IV.

हा सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाचा आराखडा शैक्षणिक वर्ष २०१४-१५ करिता मर्यादित असेल व विद्यापरिषदेच्या अंतिम मान्यतेनंतर हे परिपत्रक नियमित ठेवण्याबाबत या कार्यालयाद्वारे नवीन परिपत्रक पारीत करण्यात येईल. तसेच सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाची प्रत विद्यापीठाच्या संकेतस्थळावर उपलब्ध आहे.

करिता, या परिपत्रकाची सर्व संबंधितांनी नोंद घ्यावी.

विद्यापीठ प्रांगण,
औरंगाबाद-४३१ ००४.
संदर्भ क्र.एस.यु./सा.शा./सबवि /२०१३-१४/
६५९९-७०२
दिनांक :- २७-०५-२०१४.

संचालक,
महाविद्यालये व विद्यापीठ
विकास मंडळ.

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या परिपत्रकाची एक प्रत :-

१) मा. परिक्षा नियंत्रक, परिक्षा विभाग,
२) मा. प्राचार्य, सर्व संलग्नीत महाविद्यालये,
३) संचालक, युनिक यांना विनंती करण्यात येते की, सदरील अभ्यासक्रम विद्यापीठाच्या संकेतस्थंळावर उपलब्ध करुण देण्यात यावेत.
४) संचालक, ई-सुविधा केंद्र, विद्यापीठ परिसर,
५) जनसंपर्क अधिकारी, मुख्य प्रशासकीय इमारत,
६) कक्ष अधिकारी, पात्रता विभाग, मुख्य प्रशासकीय इमारत,
७) कक्ष अधिकारी, बी.ए. / बी.एस्सी./ बी.सी.एस./एम.एस्सी. विभाग, परीक्षा भवन,
८) अभिलेख विभाग, मुख्य प्रशासकीय इमारती मागे,

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद.

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD.

Revised Syllabus of

B.Sc. SECOND YEAR

BIO-CHEMISTRY

OPTIONAL

Semester–III & IV

[Effective for 2014-15]

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.

Syllabus of B.Sc. Bio-chemistry

B.Sc. II Year

Semester	Paper No.	Title of the Paper	Marks
III	VII	ENZYMOLOGY	50
	VIII	BIOCHEMICAL TECHNIQUES-II	50
	IX & X	Practicals	100
IV	XI	*METABOLISIM-I*	50
	XII	METABOLISIM-II	50
	XIII & XIV	Practicals	100

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.

Syllabus of B.Sc. II Year Bio-chemistry

SEMESTER-III

PAPER VII: ENZYMOLOGY **Marks: 50**

I) Isolations & purification of enzymes-selection of sources, isolation, stabilization, methods of solubilization, extraction, precipitation, filtration, centrifugation and purification.

II) Isolation of amylase, papain, trypsm, chymotrypsin.

III) Mechanism of action of chymotrypsin, carboxypeptidase, ribonuclease and Lysozyme.

IV) Immobilization-Advantages & disadvantages, Immobilization, Techniques, Enzyme Stabilization, Bioreactors, Properties of immobilized enzymes, experimental procedures.

V) Enzymes in industry.

VI) Enzymes in industry.

VII Stabilization of enzymes by immobilization

Semester - III

PAPER VIII: *BIOCHEMICAL TECHNIQUES-II* **Marks: 50**

I) Centrifugation technique:

Principles of sedimentation, cell fractionation, preparative centrifugation, analytical ultacentrifugation, determination of molecular weight,

II) Radio isotopic Technique:

Types of radioisotopes used in Biochemistry, Units of radioactivity measurements, techniques used to measure radioactivity (gas ionization and liquid scintillation counting), isotopes commonly used in biochemical studies- (P^{32}, S^{35}, C^{14} and H^{3}), Autoradiography, Biological hazards of radiation and safety measures in hadling radioisotopes. Biological applications.

III) Immunological Techniques:

Antigen, Antibody, Haptan, Antigen-Antibody reactions, Immunodiffusion, Immunoelectrophoresis, Radioimmuno assay. ELISA, Immunofluorescence.

Semester - III

PAPER IX & X: Practicals **Marks: 100**

1. Absorbance curve of Dyes.
2. Estimation of protein by biuret method
3. Estimation of protein by Lowry method
4. Estimation of glucose by Dinitrosalicylic acid
5. Estimation of free and total acidity of gastric juice
6. Estimation of nitrogen by Nessler's regent
7. Conformation of protein structure by viscometer.
8. Isolation of glycogen / Casein / albumin from biological source
9. Estimation of vitamin C by Diphenylamine
10. Isolation of starch from potato

SEMESTER-IV

PAPER XI: *METABOLISIM-I* **Marks: 50**

1. Concept of Bioenergetic:
   Concept of free energy, determination of G, Energy rich compounds, coupling of reactions, G and oxidation reduction.
2. Carbohydrate Metabolism:
   Reactions and energetics of glycolysis Alcoholic fermentations. Entry of fructose, galactose, mannose, etc. Reactions and energetic of TCA cycle. Gluconeogenesis, glycogenesis and glycogenosis. Reactions and physiological significance of pentose phosphate pathway, Regulation of glycolysis and TCA cycle.
3. Photosynthesis:
   Light & dark reactions, Chloroplast, Photosystems, Cyclic & non cyclic photo phosphorylation calvin cyle.
4. Electron Transfer chain and Oxidative Phosphorylation:
   Structure of mitochondria, sequence of electron carriers, sites of ATP production, inhibitors of electron transport chain. Hypothesis of mitochondrial oxidative phosphorylation (basis concepts) Inhibitors and uncouplers of oxidative phosphorylation. Transport of reducing potentials into mitochondria.

SEMESTER-IV

PAPER XII: METABOLISIM-II **Marks: 50**

1. **Lipid Metabolism:**

   Introduction, hydrolysis of triacyiglycerols, transport of fatty acids into mitochondria, oxidation of saturated fatty acids, ATP yield from fatty acid oxidation, Biosynthesis of saturated and unsaturated fatty acids. Metabolism of Ketone bodies, oxidation of unsaturated and odd chain fatty acids, Biosynthesis of triglycerides and importand phospholipids, glycolipids, sphingolipids, and cholesterol. Regulation of cholesterol metabolism.

2. **Amino acid Metabolism:**

   Transamination, deammation, decarboxylation, urea cycle, r-gamma glutamyl cycle. Degradation og glycine. Threonine, arginine, cystine. Biosynthesis of serence, Isoleucine, glycine, arginine. Cysteine, histidine.

3. **Nucleotide Metabolism:**

   Sources of purine & pyrimidine

   Salvage pathway of purine synthesis

   Synthesis of pyrimidine

   Degradation of purines & pyrimidences.

SEMESTER-IV

PAPER XIII & XIV: Practicals Marks: 100

1. Separation and identification of amino acids by paper chromatography.
2. Separation of lipids by thin layer chromatography
3. Detection of enzymes
4. Effect of substrate concentration on enzyme activity and determination of its Km value
5. Effect of temperature on enzyme activity
6. Effect of pH on enzyme activity and determination of optimum pH
7. Effect of enzyme concentration on enzyme activity
8. Estimation of serum alkaline phosphates / amylase
9. Column chromatography capacity & bed volume
10. Estimation of calcium & phosphorus.

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