

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

CIRCULAR NO. SU/Service Course/30/2016

It is hereby inform to all concerned that, the Choice Based Credit and Grading System have been implemented to the affiliated colleges from the academic year 2015-16 at Post Graduate level for the all Faculties. According to the guidelines of C.B.C. & G.S. it is essential to teach the Service Course to students. The authorities of the university has decided that the service courses run at University Campus and Sub-Center, Osmanabad be apply to the college level. The concerns are inform that to instruct to the students to Choice any one Service Course as per their willingness. Where only one post graduate course they can take the service course of the concerned subject. The syllabi of the service courses are uploaded with the circular on the University website www.bamu.ac.in


The service courses be teach to the students with the **syllabus of IVth-Semester for this year only and hereafter** to tech with the syllabus of III-Semester as per their relevant courses.

This is effective from the academic year 2016-17.

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

University Campus,
Aurangabad-431 004.
REF.NO. SU/SERVICE COURSE /
SYLLA./2016/5117-516
Date:- 02-09-2016.

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Director,
Board of College and
University Development.

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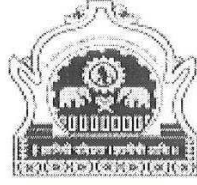
**1] The Principals of concerned Colleges,
Dr. Babasaheb Ambedkar Marathwada University.**

Copy to :-

- 1] The Controller of Examinations,
 - 6] The Section Officer, [M.A. Unit],
 - 7] The Section Officer, [M.Sc. Unit],
 - 8] The Section Officer, [M.Com. Unit],
 - 9] The Section Officer, [Management Unit],
 - 10] The Section Officer, [Professional Unit],
 - 11] The Section Officer, [Engineering Unit],
 - 3] The Programmer [Computer Unit-1] Examinations,
 - 4] The Programmer [Computer Unit-2] Examinations,
 - 5] The Public Relation Officer,
 - 6] The Co-ordinator, E-Suvidha Kendra, [Rajarshi Shahu Maharaj Pariksha Bhavan,
 - 7] The Record Keeper.
- Dr. Babasaheb Ambedkar Marathwada University,

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**DR. BABASAHEB AMBEDKAR
MARATHWADA UNIVERSITY,
AURANGABAD.**



M.Sc. Bio-Physics

Service Course

[Academic Year 2016-17 & onwards]

Biophysics Service Courses :

BPSC-1 : Service Course: Bio- analytical Techniques

[Total Marks: 100] [Total Workload: 60hrs] [Credits: 4]

Unit 1 : Optical Techniques:[15 hrs.]

Microscopy : Basic principle in optics , Light & Electron Microscope- Principle ,Types, Instrument design ,Applications.

Polarimetry : Principle ,Types, Instrument design ,Applications.

Refractometry: Principle , Types, Instrument design ,Applications.

Unit 2 : Spectroscopic Techniques : [15 hrs.]

Basic principles of Spectroscopy , Colorimetry, Spectrophotometry, Fluorimetry ,IR Spectra, NMR &ESR Spectra, Atomic absorption & Flame Photometry: Principle , Instrument design and Applications.

Unit 3: Hydrodynamic Techniques: [15 hrs.]

Analytical and Preparative Centrifugation, Viscometry, Chromatography, Electrophoresis ,pH meter- Principle , Instrument design , Applications.

Unit 4: Immunotechniques : [15 hrs.]

Concept of Antigen, Antibody , Ag-Ab Interaction , Immuno-diffusion,

Immuno-electrophoresis - Principle ,Types, Instrument design ,Applications.

BPSC- 2 : Service Course : Biophysics of Radiation

[Total Marks: 100] [Total Workload: 60hrs] [Credits: 4]

Unit 1 : Physicochemical aspects of Radiation:[15 hrs]

Basic Concepts of Radiation Science, Natural radiation background, Radioactivity phenomenon , Ionizing and Non-ionizing Radiations, Physical characteristics and interaction of radiation , Radiolysis of water ,free radical diffusion kinetics , photo- physical processes, quantum photo physical principles

Unit2 : Radiobiology: [15 hrs]

Consequences of radiation exposure in living systems, target theory , molecular and cellular effects of radiation ,somatic and genetic effects, LD₅₀, Radiation Syndrome, Radio tracer technique, radioisotopic applications in biology,medicine & agriculture

Unit 3 : Radiation measurements: [15 hrs]

Basic principle of radiation detection and measurements, Radiation units, Sources of radiations, Physical and Chemical dosimeters.

Unit 4 : Radiation Safety Measures : [15 hrs]

Natural and man made radiation exposures, radiation Hazards, Principles of radiation protection, dose equivalent units, radiation protection measures in different establishment, transportation and disposal of radioactive substances, Administrative and legislative aspect of radiation protection.

BPSC-3: Service Course: Biophysics in Medicine

[Total Marks: 100] [Total Workload: 60hrs] [Credits: 4]

Unit 1: Physiological Biophysics [15 hrs]

Biophysical Principles of Human Physiology, Structure and functions of heart, lungs, brain and kidney, human sense organs.

Unit 2: Haematology and Hemodynamics [15 hrs]

Blood as a tissue- composition & function, Biophysical properties of plasma, blood viscosity, Blood clotting, Blood groups, blood rheology, blood flow and dynamic of circulation, Blood analytical techniques, blood pressure & its measurements, pulse rate & its recording.

Unit 3: Electrophysiology [15 hrs]

Electrocardiogram (ECG), Electroencephalogram (EEG), Electromyogram (EMG), Electrooculogram (EOG), - Principle, Instrument design, Clinical utility.

Unit 4: Medical imaging [15 hrs]

x-ray imaging, CT Scan, PET Scan, Angiography, MRI, Ultrasonography -- Principle, Instrument design, Applications.
