

S-01 & 02 June, 2016 AC after Circulars from Circular No.100 & onwards+ - 39 -
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.

Copy forwarded with compliments to:-

**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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**D R. BABASAHEB AMBEDKAR
MARATHWADA UNIVERSITY,
AURANGABAD.**



M.Sc. Chemistry

Service Course

[Academic Year 2016-17 & onwards]

CHESC-301: Structural elucidation by spectral method

04 Hrs/Week

Credits: 04

Marks 100

UNIT-I: Nuclear Magnetic Resonance Spectroscopy (^1H NMR)

[12hrs]

Elementary ideas (Recapitulation); Spin-spin couplings, Different types of couplings, factors affecting on coupling constants, Karplus equation, Spin systems (AB, AX, ABX, AMX), Rate processes, spin decoupling, shift reagents, Nuclear Overhauser effect (NOE), INEPT and INADEQUATE.

UNIT-II: ^{13}C Nuclear Magnetic Resonance Spectroscopy

[12hrs]

Elementary ideas, instrumental problems, chemical shifts (aliphatic, olefinic, alkyne, aromatic, heteroaromatic and carbonyl carbons); Effect of substituents on chemical shifts.

UNIT-III: Mass Spectroscopy

[12hrs]

Introduction, ion production (EI, CI, FD and FAB), ion analysis, ion abundance, factors affecting on fragmentation, fragmentation of different functional groups, molecular ion peak, isotopic peaks, metastable peak, Nitrogen rule, McLafferty rearrangement, Retro-Diels-Alder reaction.

UNIT-IV

[12hrs]

Problems based on joint applications of UV, IR, ^1H NMR, ^{13}C NMR and Mass spectroscopy.

UNIT-V

[12hrs]

Mossbauer spectroscopy: Principle, factors affecting the line position and shape, isomer effect and Quadrupole splitting iron salt like compounds, complexes, carbonyl compounds (temperature dependence of isomer shift and Quadrupole splitting in simple compound and coordination, polynuclear complexes), Numericals. **Electron Spin Resonance Spectroscopy:** Introduction, principle of ESR spectroscopy, presentation of spectrum, hyperfine splitting in various structures, hyperfine splitting diagram of representative examples, factors affecting the magnitude of 'g' values, Zero field splitting, Kramer's degeneracy, Anisotropy in the hyperfine coupling constant, electron delocalization, instrumentation and applications.

Reference Books:

1. Introduction to Spectroscopy: D. L. Pavia, G. M. Lampman, G. S. Kriz
2. Spectrometric Identification of Organic Compounds: R. M. Silverstein & F. X. Webster
3. ^{13}C NMR Spectroscopy: G. C. Levy, R. L. Lichter, G. L. Nelson

4. Spectroscopic Methods in Organic Chemistry: D. H. Williams & I. Flemming
5. Absorption Spectroscopy of Organic Compounds: V. M. Parikh
6. Mass Spectrometry: K. G. Das & James
7. Coordination Chemistry by Experimental Methods: K. Barger
8. Coordination Chemistry vol. I: E. Martell
9. Physical Methods for Chemistry: R. S. Drago
10. Structural Methods in Inorganic Chemistry: E. A. V. Ebsworth & D. W. H. Rankin
11. Organic Structure Analysis: Philips Crews