

**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](http://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.**

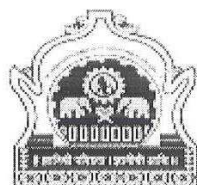
**Copy to :-**

- 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. Herbal Technology**

**Service Course**

*[ Academic Year 2016-17 & onwards ]*

**M.Sc. Herbal Technology**  
**Semester IV**  
**Service Course- I**  
**(BASIC PLANT TISSUE CULTURE)**

**Unit-I (Introduction to Plant Tissue Culture):** Introduction to Plant Tissue culture, Terms and definitions, Historical background, Laboratory organization, Tools and techniques, methods of sterilization and laboratory contaminants its control and measures.

**Unit-II (Media Preparation and Dynamics of Growth):** Introduction to tissue culture: Media composition, Preparation, Phytohormones and their usage, selection of media for specified applications, initiation of tissue culture, cellular totipotency, media for initiation of callus, dynamics of callus growth, organogenesis and factors controlling it, genome instability in relation to morphogenesis, somaclonal variation and its applications.

**Unit-III (Culture Techniques):** Cell and organ culture: Plant organ culture; shoot tip, Micropropagation, shoot apical meristem, root, leaf, flower and ovary culture, embryo rescue, somatic embryogenesis, factors influencing embryogenesis, synthetic seeds, suspension culture in stationary and stirred tank reactors,

**Unit-IV (Advance Culture Techniques):** Isolation of single cells and their culture, measurement of growth, protoplast isolation, culture, regeneration and fusion of protoplasts, generation of cybrid and hybrids, cryopreservation of plant cells. Role of ovary and ovule in *In-vitro* fertilization in production of agricultural and horticultural crops. Hardening techniques

**Unit-V (Recombinant Techniques in Tissue Culture):** Recombinant DNA technology: Gene cloning, principles and techniques. Techniques for gene transfer. Markergenes. Applications of tissue culture: Applications in agriculture and industry.

**SUGGESTED READINGS**

1. Kalyankumar De. Introduction to Plant Tissue culture,
2. Bhojwani, Plant Tissue Culture.
3. Dubey. R. C. a Textbook of Microbiology
4. Montell. S. H. Mathews, J. A., Meker, R. A. Principles of Plant Biotechnology.
5. Glover, D. M. and Hanes, B. D. (eds.) 1995. DNA cloning 1: A practical approach, core techniques, 2<sup>nd</sup> edition, PAS, IRL press at Oxford University Press.
6. Purohit Plant Tissue Culture
7. Plant cell culture protocols. Humana Press, Inc. New Jersey, USA.
8. Shaw, C. H. (ed.) 1998, Plant Molecular Biology. A practical approach IRI Press, Oxford.
- 9., R. H. 2000. Plant Tissue culture: Techniques and Experiments. Academic Press, New York.
10. Rajdan : An introduction to plant tissue culture.
11. Sandhya Mitra: Genetic engineering.