

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

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DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY**CIRCULAR NO. SU/Sci./B.Sc. Syllabi/6/2016**

It is hereby inform to all concerned that, on the recommendations of the Committees/Ad-hoc Boards the Hon'ble Vice-Chancellor has accepted the following revised syllabi in his emergency powers under Section-14[7] of the Maharashtra Universities Act, 1994 on behalf of the Academic Council as mentioned against their names under the **Faculty of Science** :-

| Sr. No. | B.Sc. III Year Revised Syllabi | Semester |
|---------|---|----------|
| [1] | B.Sc. Automobile Technology . [Degree Course], | V & VI |
| [2] | B.Sc. Workshop Technology [Degree Course], | V & VI |
| [3] | B.Sc. Refrigeration & Air Conditioning [Degree Course], | V & VI |
| [4] | B.Sc. Bioinformatics [Degree Course]. | V & VI |
| [5] | B.Sc. Biotechnology [Optional], | V & VI |
| [6] | B.Sc. Horticulture [Optional], | V & VI |
| [7] | B.Sc. Dry Land Agriculture [Optional], | V & VI |
| [8] | B.Sc. Sericulture [Optional], | V & VI |

This is effective from the **Academic Year 2016 2017** and onwards as appended herewith.


These syllabi are also available on the University Website www.bamu.ac.in

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.SU/B.Sc./2016/3849 - 68

Date:- 23-06-2016.

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Director,
Board of College and
University Development.

Copy forwarded with compliments to :-

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

Copy to :-

- 1] The Controller of Examinations,
- 2] The Section Officer, [B.Sc. Unit],
- 3] The Section Officer, [B.C.S. Unit],
- 4] The Programmer [Computer Unit-1] Examinations,
- 5] The Programmer [Computer Unit-2] Examinations,
- 6] The In-Charge, E-Suvidha Kendra, [Professional Unit], Rajarshi Shahu Maharaj Pariksha Bhavan, Dr. Babasaheb Ambedkar Marathwada University,
- 7] The Record Keeper,
Dr. Babasaheb Ambedkar Marathwada University.

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**Dr. Babasaheb Ambedkar Marathwada University ,
Aurangabad**

Revised Syllabus of Horticulture

B.SC. IIInd Year

Semester V and VI

Effective from June 2016

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad**B.Sc. IIIrd Year Horticulture Course Curriculum****(Semester Pattern)****Course Structure**

| Paper No. | Name of Course | Credit | Lectures | Marks |
|--------------------|--|---------------|-----------------|--------------|
| Semester V | | | | |
| XV | Post-Harvest Management of Fruits and Vegetables | 3 | 45 | 50 |
| XVI | Mushrrom Culture and Apiculture | 3 | 45 | 50 |
| XVII | Practical based on XV | 1.5 | 45 | 50 |
| XVIII | Practical based on XVI | 1.5 | 45 | 50 |
| Semester VI | | | | |
| XIX | Preservation of Fruits and vegetables | 3 | 45 | 50 |
| XX | Horticulture Business Management | 3 | 45 | 50 |
| XXI | Practical based on XIX | 1.5 | 45 | 50 |
| XXII | Practical based on XX | 1.5 | 45 | 50 |

B.Sc. Third Year

Semester:- Vth

Paper No-XV

Paper title- Post-Harvest Management of Fruits and Vegetables (*Theory*)

Unit I

- 1) Importance of post-harvest management of fruits and Vegetables.(1)
- 2) Scope of post-harvest management of fruits and Vegetables. (1)
- 3) Future status of post-harvest management of fruits and Vegetables. (1)
- 4) Nutritional value of fruits and Vegetables in human diets. (4)
- 5) Study of maturity standards of fruits and Vegetables (4)
- 6) Harvest techniques of fruits and Vegetables methods stages signs of harvesting. (4)

Unit II

- 7) Careful handling of harvested fruits and Vegetables (2)
- 8) Ripening factors responsible for ripening, pre-harvest & post-harvest factors(03)
- 9) Climacteric and non-climacteric types of fruits and Vegetables. (2)
- 10) Methods of grading and packaging of fruits and vegetables (5)
- 11) Methods of storage for prolonging shelf life of harvested fruits and Vegetables. (3)

Unit III

- 12) Post-harvest disease and pest management of fruits and Vegetables. (3)
- 13) Causes of spoilage of fruits and Vegetables and control measures during storage(3)
- 14) Methods of pre-cooling of fruits and Vegetables (3)
- 15) Byproducts utilizing waste materials(3)
- 16) Transportation, Marketing and Export of fruits and Vegetables. (3)

B.Sc. Third Year

Semester:- Vth

Paper No-XVI

Paper title- Mushroom Culture and Apiculture (*Theory*)

Unit I

- 1) Introduction, Scope and Importance, Nutritional Importance of Mushroom (05)
- 2) Classification and types of Mushroom, Morphology and Identification of life stages mushroom(05)
- 3) Preparation of Culture Media and Spawns. (05)

Unit II:

- 4) Cultivation of Oyster, white button and Paddy straw mushroom., Different method of composting, Filling of trays, Pasteurization and spawning etc. (05)
- 5) Management of pest and disease of mushroom. (05)
- 6) Marketing, Preservation and transportation of mushroom (05)

Unit III:

- 7) Introduction, Importance and Scope. Resource and potential , Bee flora and pollination of crops (02)
- 8) Types of honey bee , Castes of honey bee , Bee keeping accessories, How to acquire and hive bees (03)
- 9) Management of Apiculture : Care and management of bee keeping , Pests and diseases of honey bees , Pesticide poisoning in honey bees, Harvesting and processing of bee products (07)
- 10) Apiculture Industry, Marketing and Economics: Bee keeping industries and marketing of honey , Economics of bee keeping (03)

B.Sc. Third Year

Semester:- Vth

Paper No-XVII

Paper title- Post-Harvest Management of Fruits and Vegetables (*Practical*)

- 1) Maturity Signs and Harvesting of Fruits and Vegetables (01)
- 2) Identification of Different equipment's used in Processing of Fruits and Vegetables (01)
- 3) Pre-cooling of Fruits and Vegetables (01)
- 4) Grading of Fruits and Vegetables (01)
- 5) Packaging and Storage Of Fruits and Vegetables (01)
- 6) Identification of Post-Harvest diseases and pests of Fruits and Vegetables.(01)
- 7) Determination of Total Soluble Solid (TSS) (01)
- 8) Determination of Acids (Citric and Acetic Acid) (01)
- 9) Determination of Vitamin C (Ascorbic Acid) by titration.(01)
- 10) Determination of Pigments, Vitamin A (beta – Carotenes) (01)
- 11) Determination of Reducing and Total Sugars from Fruits. (01)
- 12) Determination of total minerals by dry ashing. (01)
- 13) Estimation of starch from potato and sweet potato. (01)
- 14) Preparation of gums from cluster beans. (01)
- 15) Visit to Preservation Units. (01)

B.Sc. Third Year

Semester:- Vth

Paper No-XVIII

Paper title- Mushroom Culture and Apiculture (*Practical*)

1. Introduction and Classification of mushrooms.
2. Study of morphology and of Mushroom
3. Materials and equipments used for commercial mushroom cultivation
4. Preparation of culture media.
5. Preparation of master and commercial spawns
6. Cultivation of oyster, white button and paddy straw mushroom
7. Different method of composting techniques.
8. Filling the trays, staking, pasteurization and spawning
9. Different recipe of mushroom
10. Types of honey bee , Castes of honey bee ,
11. Bee keeping tools and accessories
12. Pests and diseases of honey bees ,
13. Harvesting and processing of bee products (07)
14. Visit to Mushroom culture/ Apiculture
15. Project preparation of mushroom/apiculture

B.Sc. Third Year

Semester:- VIth

Paper No-XIX

Paper title- Preservation of Fruits and Vegetables (*Theory*)

Unit I

- 1) History of preservation of fruits and vegetables. (02),
- 2) Importance and scope of preservation of fruits and vegetables.(03)
- 3) Principles of preservation (02)
- 4) Selection of site, (02)
- 5) Methods of preservation
 - 5.1 Physical methods (02)
 - 5.2 Chemical methods (02)
 - 5.3 Fermentation technique (01)
 - 5.4 Other methods (01).

Unit II

- 6) Role of plastic in fruit industry, (03)
- 7) Role of preservatives, fruit color, flavors, chemicals, salt, sugar and vinegar. (06)
- 8) Study of containers for packaging of preserved products- Tin cans, Glass containers, China clay wares and their advantages and disadvantages. (06)

Unit III

- 9) Quality control standards, ISI, food laws, sanitation etc. (05)
- 10) Testing of preserved products- quality aspects, color flavor and value addition in fruit products (05)
- 11) Importance of cold storage in preserved vegetable products. (03)
- 12) Packaging, Transportation, and Exportation of preserved products. (2)

B.Sc. Third Year

Semester:- VIth

Paper No-XX

Paper title- Horticulture Business Management (*Theory*)

Unit-I : Role of Agencies and Business Management Factors

1. Role of Finance and other Non government Institutions, NABARD, CFTRI, ICAR/IARI/NHB, APEDA, Cooperative Bank, Self Help Groups, Mahabanana, MAHAGRAPE etc. Crop Insurance. (05)
2. Cooperative Farming and Marketing, Group Farming, Carbon Credit, (05)
3. Export and Import policy and Procedure of Horticultural products. (05)
4. Preparation of Project report.

Unit-II :

Concept of Enterpruner/Business and Entrepreneurship

5. Definition, Meaning, Role and potential of enterpruner and entrepreneurship in economic development (05).
6. Characteristics of an enterpruner (02).
7. Classification of enterpruner (02).
8. Women's enterpruner (01).
9. Meaning and definition of Enterprunership. (02)
10. Role of entrepreneurship in economic development. (03)

Unit-III Entrepreneurship Development Programmes :

11. Enterprunership development, Process of Enterprunership development at community level and individual level (05).
12. Motivation and Motivating factors for Enterprunership development. Planning and enterprunership Development Programme (02).
13. Objectives, Functions, Phases. of Enterprunership Development Programme. (02)
14. Managing competition. SWOT analysis. Enterprunership behavior-concepts and factors affecting , Characteristics of Indian food processing industries. (03)
15. Government schemes and incentives for promotion of enterprunership, Government policy on small and medium enterprunership. (03)

B.Sc. Third Year

Semester:- VIth

Paper No-XXI

Paper title- Preservation of Fruits & Vegetables (*Practical*)

1. Canning of fruits and Vegetables (01)
2. Drying and Dehydration of fruits and Vegetables (01)
3. Preparation of Juice from Fruits and Vegetables, Squash & cordial. (01)
4. Preparation of Jam, Jelly and marmalade (01)
5. Preparation of pickles from fruits and Vegetables (01)
 - 5.1 Preservation with salt
 - 5.2 Preservation with vinegar
 - 5.3 Preservation with oil
 - 5.4 Preservation with mixture of salt, oil, spices and vinegar.
6. Preparation of preserve and candy from Fruits and Vegetables (01)
7. Preparation of raisin making in grapes (01)
8. Preparation of vinegar (01)
9. Preparation of unfermented fruit beverages, juice Ready to serve (RTS), nectar, Fruit juice powder, fruit juice concentrate. (01)
10. Preparation and preservation of fermented beverages (Wine making) (01)
11. Preparation of some other valuable products from fruits (Mango slices and amchur) , Mango leather, fruit cheese, fruit butter, fruit toffee, papain form papaya. (01)
12. Preparation of tomato products (01)
 - 3.1 Tomato juice
 - 3.2 Tomato puree and paste
 - 3.3 Tomato sauce and ketchup
 - 3.4 Tomato chutney
 - 3.5 Tomato soup
 - 3.6 Tomato chilli sauce
13. Preparation of potato products (01)
 - 4.1 potato chips/ wafers.
 - 4.2 Potato flour & 4.3 Canned potatoes
14. Preparation of chutneys from vegetables (01)
15. Mushroom processing (01)

B.Sc. Third Year

Semester:- VIth

Paper No-XXII

Paper title- Horticulture Business Manamgnet (*Practical*)

1. Steps in formulating a project proposal.
2. Selection and identification of enterprise based on local/ regional resources.
3. Case study of successful entrepreneurs.
4. Case study of successful progressive farmers
5. SWOT analysis of selected enterprise
6. Cost of cultivation, production and brear even alalysis.
7. Certification procedure of organic products.
8. Physotsantiaory certification of export oriented products.
9. Field visit to successful agri – enterprise .
10. Visit to agri clinicl and agri business center
11. Visigt to commercial, cropoerative bank, NABARD etc.
12. Studies of local market syrvey based on enterprise.
13. Prepration of project report for enterprise or processibg unit
14. Prepration of project report for greenhouse.
15. Prsentation of Project report

Recommended Books & Periodicals :

- 1) Post-harvest management of horticultural crops, -Saraswathy S.- Agrobios Publication
- 2) Bhutani RC. 2003. *Fruit and Vegetable Preservation*. Biotech Books.
- 3) Chadha KL & Pareek OP. (Eds.). 1996 *Advances in Horticulture*. Vol. IV. Malhotra Publ. House.
- 4) Ranganna S. 1997. *Hand Book of Analysis and Quality Control for Fruit and Vegetable Products*. Tata McGraw-Hill.
- 5) Palaniappan & Annadurai. 2008. *Organic Farming- Theory and Practise*. Scientific Publ.
- 6) A Hand book on Post Harvest Management of fruits and vegetables: P. Jacob John : Day publishing House Delhi
- 7) Post harvest Technology of Fruits and Vegetables Handling, Processing, Fermentation and Waste management Vol.1&2 L.R.Verma and V.K.Joshi. Indus publishing company, New Delhi.
- 8) Fruit and Vegetable Preservation: Principles and Practices” –Dr.R.P. Shrivastava and Dr. Sanjeev Kumar, *IBDC, New Delhi*.
- 9) Farm Management – An Economic Analysis, Dhondyal, S.P., Friends pub. Merrut.
- 10) Fundamentals of Farm Business Mangement Johl, S.S.. Kalyand pub. Ludhianan.
- 11) Business organization and management, Shukla, M.C. S.Chand and Company, New Delhi
- 12) Agro Enterprises for Empowering Farm Women By Rathakrishnan, T. ; Padma, S.R.
- 13) Mushroom production and processing technology, Pathak V N- Agrobios Publication
- 14) Hand book on Mushroom by Nita Bahl. Oxford and IBH Pub. Co., New Delhi 1970.
- 15) Edible Mushrooms and their cultivation by S.T. Chang and C.S. Miles CBS Pub. Dellhi 1993
- 16) Mushroom growing for beginners by D.S. Chahal PAU, Ludhiayna.
- 17) Bee keeping in India- Sardar Singh, ICAR, Pub. New Delhi
- 18) Hand book of Honey bee – R. C. Mishra ICAR, Pub. New Delhi
- 19) Fundamentals of beekeeping – F.A. Shah

Periodicals : -

1. Indian Horticulture
2. Indian Journal of Horticulture
3. South Indian Journal of Horticulture
4. Panjab Horticulture Journal
5. Haryana Horticulture Journa

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