DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

CIRCULAR NO.ACAD/NP/B.Sc.-Ist Yr./SEM.-I & II/157/2013

It is hereby notified for information of all concerned that, on the recommendations of the Boards of Studies, Ad-hoc Boards, and Faculty of Science, the **Academic Council at its meeting held on 25-03-2013 has accepted the following revised syllabi for B.Sc. First Year progressively under the Faculty of Science :-**

Sr. No.	*Revised Syllabus*	
[1]	***B.Sc. [Physics]***	***Semester- I & II,***
[2]	***B.Sc. [Dairy Science & Technology]***	***Semester- I & II,***
[3]	***B.Sc. [Industrial Chemistry]***	***Semester- I & II,***
[4]	***B.Sc. [Geology]***	***Semester- I & II,***
[5]	***B.Sc. [Chemistry]***	***Semester- I & II,***
[6]	***B.Sc. [Botany]***	***Semester- I & II,***
[7]	***B.Sc. [Electronics] Science***	***Semester- I & II,***
[8]	***B.Sc. [Fisheries]***	***Semester- I & II,***
[9]	***B.Sc. [Microbiology]***	***Semester- I & II,***
[10]	***B.A. [Statistics]***	***Semester- I & II,***
[11]	***B.Sc. [Statistics]***	***Semester- I & II,***
[12]	***B.Sc. [Zoology]***	***Semester- I & II,***
[13]	***B.Sc. [Textile and Interior Decoration]***	***Semester- I & II,***
[14]	***B.Sc. [Home Science]***	***Semester- I & II,***
[15]	***B.A. / B.Sc. [Mathematics]***	***Semester- I & II.***

This is effective from the **Academic Year 2013-2014** and onwards.

These **syllabi are available on the University Website www.bamu.net**

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.ACAD/NP/B.SC.-IST YEAR/
Sem-I & II/2013/5132-541
A.C.S.A.I.No.327[9].

Date:- 08-05-2013.

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Director,
Board of College and University Development.

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Copy forwarded with compliments to :-

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

2] The Director, University Network & Information Centre, UNIC, with **a request to upload the above all syllabi on University Website [www.bamu.net].**

Copy to :-

1] The Controller of Examinations,

2] The Superintendent, [B.Sc. Unit],

3] The Superintendent, [B.A. Unit],

4] The Superintendent, [Eligibility Unit],

5] The Programmer [Computer Unit-1] Examinations,

6] The Programmer [Computer Unit-2] Examinations,

7] The Director, [E-Suvidha Kendra], in-front of Registrar's Quarter,
Dr. Babasaheb Ambedkar Marathwada University,

8] The Public Relation Officer,

9] The Record Keeper,
Dr. Babasaheb Ambedkar Marathwada University.

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DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD.

Revised Syllabus of

B.Sc. Ist Year

Botany

Semester - I & II

[Effective from 2013-14 & onwards]

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD

B. Sc. I, Year Botany Curriculum

(SEMESTER PATTERN)

Effective from Academic year -2013-14

Course Structure

Class	Paper No	Title of Paper	Lectures	Marks
B.Sc. I		**SEMESTER - I**		
	I	Diversity of Cryptogams -I	**45**	**50**
	II	Morphology of Angiosperms	**45**	**50**
	III	**Practical Based on Theory Paper- I & II**	**45**	**50**
		SEMESTER – II		
	IV	Diversity of Cryptogams – II	**45**	**50**
	V	Histology, Anatomy and Embryology	**45**	**50**
	VI	**Practical based on Theory Paper No. IV & V**	**45**	**50**

B. Sc. I Year (Theory)
Semester - I
Paper I
(Diversity of Cryptogams - I)

45L

Unit - 1

1.1 **Viruses:**
General characters, classification based on host, economic importance, TMV – structure and multiplication (04)

1.2 **Mycoplasma:**
General characters (01)

1.3 **Bacteria:**
General characters, ultra structure, classification based on shape, reproduction, economic importance (05)

1.4 **Cryptogams:**
General characters, classification according to G.M. Smith up to class level (01)

1.5 **Lichens:**
General characters, nature of association, forms of thalli, economic importance, structure and reproduction in *Usnea* (04)

Unit – 2

2. **Algae:**
2.1 General characters, classification according to F.E. Fritsch (1935) up to the class level, economic importance. (02)
2.2 Systematic position, occurrence, thallus structure, reproduction:-vegetative, asexual and sexual, (excluding development of sex organs) and graphic life cycle with respect to following types:
i. Cyanophyceae – *Nostoc* (02)
ii. Chlorophyceae – *Chara* (03)
iii. Xanthophyceae – *Botrydium* (02)
iv. Phaeophyceae – *Sargassum* (03)
v. Rhodophyceae – *Batrachospermum* (03)

Unit – 3

3. **Fungi:**
3.1 General characters, classification according to Alexopoulous and Mims (1979) up to the class level, economic importance (03)
3.2 Systematic position, occurrence, structure of mycelium, reproduction - asexual, sexual and graphic life cycle with respect to the following types:
i) Oomycetes – *Albugo* (03)
ii) Zygomycetes – *Mucor* (02)
iii) Ascomycetes – *Eurotium* (02)
iv) Basidiomycetes – *Agaricus* (03)
v) Deuteromycetes – *Cercospora* (02)

B. Sc. I Year (Theory)
Semester - I
Paper - II
(Morphology of Angiosperms)

45L

Unit – 1

1.1- Basic body plan of flowering plant, modular type of growth, diversity of plant forms – Herbs, Shrubs, Trees, Climbers; annuals, biennials and perennials. (02)

1.2 Morphology of vegetative organs:

a) **Root:** Characteristics, functions, regions of root, types – tap and adventitious, modification of root for storage, mechanical support (stilt root) and vital functions (Pneumatophore). (04)

b) **Stem:** Characteristics, functions, modification – underground, sub aerial and aerial (03)

c) **Leaf:** Parts of typical leaf, phyllotaxy, types (simple and compound), diversity in shape and size, venation and modifications of leaf. (06)

Unit – 2

2. Morphology of reproductive organs:

2.1 Inflorescence: Racemose, cymose and special types. (05)

2.2 Flower: Definition, parts of typical flower, forms of thalamus, androphore, gynophore, gynandrophore, insertion of floral whorls on thalamus (hypogyny, perigyny and epigyny), structure, function and modification of calyx, corolla, androecium, gynoecium, aestivation and placentation (15)

2.3 Fruit: Types of fruits (06)

2.4 Fruit and Seed: dispersal strategies. (04)

B. Sc. I Year (Practical)
Semester – I
Paper – III
Practical Based on Theory Paper No. I & II
(Diversity of Cryptogams – I & Morphology of Angiosperms)

45L

Diversity of Cryptogams- I

Note: Study of specimens of Bacteria, Algae, Fungi, through temporary mounting, permanent slides, field work and biovisual aids. Observation of disease symptoms in hosts infected by Fungi may be observed

1. Study of simple and compound microscope
2. Virus: Tobacco Mosaic Virus
3. Gram staining in bacteria, forms of Bacteria
4. Algae:
a) Nostoc
b) Chara
c) Botrydium
d) Sargassum
e) Batrachospermum
5. Fungi:
a) Albugo
b) Mucor,
c) Eurotium
d) Agaricus
e) *Cercospora*
6. Lichens: Form - Crustose, Foliose, Fruticose; *Usnea.*

Morphology of Angiosperms

Note: Study of the following with the help of temporary mountings, permanent slides, charts, models, specimens and biovisual aids.

1. Study of root and its modifications:
a) Tap root
b) Adventitious root
c) Storage roots
d) Stilt root
e) Respiratory root.
2. **Study of stem and its modifications:**
a) Underground stem
b) Sub aerial stem
c) Aerial stem
3. **Study of leaf and its diversity**:
a) Types of leaf (Simple, Compound)
b) Shape and size
c) Venation
d) Phyllotaxy
e) Modifications
4. **Study of inflorescence**:

a) Racemose
b) Cymose
c) Special

5. Study of flowers:

a) Typical flower (*Hibiscus* / *Datura*)
b) Hypogynous, Perigynous and Epigynous
c) Aestivation
d) Forms of corolla – cruciform, papilionaceous, infundibuliform and bilabiate
e) Parts of typical stamen, adhesion and cohesion.
f) Parts of typical carpel and placentation

6. Study of flowers with respect to pollination mechanism:

a) Calotropis
b) Ocimum
c) Salvia
d) Helianthus
e) Ficus
f) Clitoria

7**. Study of fruits:**

a) Simple: legume, capsule, caryopsis, achene, drupe, berry.
b) Aggregate: an etaerio of berries, an etaerio of follicles.
c) Composite fruit: sorosis, syconus.

B. Sc. I Year (Theory)
Semester – II
Paper - IV
(Diversity of Cryptogams - II)

45 L.

Unit- 1

1. Bryophytes:

1.1 General characters of bryophytes, classification as per G. M. Smith (02)

1.2 Systematic position, occurrence, thallus structure (external and internal), reproduction -vegetative, asexual, and sexual (excluding developmental stages), graphic life cycle and alternation of generations of the following types:

a) Hepaticopsida – *Marchantia* (07)
b) Bryopsida – *Funaria* (06)

Unit-2

2. Pteridophytes:

2.1 General characters of Pteridophytes, classification as per G. M. Smith (02)

Systematic position, occurrence, external and internal structure of sporophyte and gametophyte, reproduction (excluding developmental stages), graphic life cycle and alternation of generations of the following types:

a) Psilopsida – *Psilotum* (03)
b) Lycopsida – *Lycopodium*, *Selaginella* (12)
c) Sphenopsida – *Equisetum* (06)
d) Pteropsida – *Marsilea* (07)

B. Sc. I Year (Theory)
Semester - II
Paper - V
(Histology, Anatomy and Embryology)

45 L.

Unit – 1 Histology:

a) Types of tissue:

i. Meristematic tissue – Meristem, structure and types based on origin and position. (03)
ii. Permanent tissues: Simple, Complex and Secretary (06)
iii. Epidermal tissues: Trichomes and Stomata (02)
b) Histological organization of root and shoot apices (02)
c) Various theories of cellular organization (02)

Unit – 2

Anatomy:

a) Primary structure of root, stem and leaf of Monocot (Maize) and Dicot (Sunflower) (07)
b) Secondary growth in root and stem of Dicot (Sunflower) (04)
c) Wood anatomy: Growth rings, heart wood and sap wood (02)
d) Periderm: Origin, structure and functions. (02)

Unit – 3

Embryology:

a) Structure of anther, microsporogenesis and development of male gametophyte. (03)
b) Structure and types of ovule, megasporogenesis and development of female gametophyte (Polygonum type). (04)
c) Pollination -Mechanism, types and agencies. (02)
d) Double fertilization and its significance (01)
e) Development of Dicot embryo (Crucifer type). (01)
f) Structure, development and types of endosperm. (02)
g) Structure of Dicot and Monocot seed (02)

B. Sc. I Year (Practical)
Semester - II
Paper - VI
Practical Based on Theory Paper No. IV & V 45L
(Diversity of Cryptogams – II & Histology, Anatomy and Embryology)

Diversity of Cryptogams – II

Note: Study of specimen of Bryophytes, and Pteridophytes through temporary mounting,
permanent slides, field work and biovisual aids.

a) Bryophytes:
i. *Marchantia*
ii. *Funaria*

b) Pteridophytes:
i. *Psilotum*
ii. *Lycopodium*
iii. *Selaginella*
iv. *Equisetum*
v. *Marsilea*

Histology, Anatomy and Embryology

Histology:
1. Meristem: root apex and shoot apex
2. Permanent tissues – simple, complex and secretary
3. Epidermal tissues: trichomes and stomata

Anatomy:
1. Anatomy of young dicot (Sunflower) and monocot (Maize) root.
(Double stained permanent slide preparation)
2. Anatomy of young dicot (Sunflower) and monocot (Maize) stem.
(Double stained permanent slide preparation)
3. Anatomy of dicot (Sunflower) and monocot (Maize) leaf.
(Double stained permanent slide preparation)

Embryology:
1. Study of T.S. of anther
2. Structure of ovule (anatropous), types of ovules
3. Study of Dicot and Monocot seed (embryo)

Note for Paper-III and VI:
Candidate shall submit the following at the time of practical exam.
1. Certified laboratory record book.
2. Field note book and Tour report.
3. Collection of specimens
4. Permanent slides of root stem and leaf.

In addition to number of practicals prescribed above, the students are required to undertake field excursions to the places of botanical interest and industrial places under the guidance of teacher. Collection of rare flowering and non flowering plants should be avoided during excursion. There shall be frequent study tours in local areas. T.A. and D.A. be paid to the teachers, peons and field collectors as per university rules. The record book is to be signed periodically by teacher in charge and certified by the Head of Department at the end of the term.
Candidate should not be allowed to appear for practical examination without a certified record book or a certificate from the Head of Department.

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