

S-25 March, 2013 AC after Circulars from Circular No.153 & onwards

- 17 -

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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S. M. J. J.
Director,
Board of College and
University Development.

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S-25 March, 2013 AC after Circulars from Circular No.153 & onwards

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S*/-080513/-

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



Revised Syllabus of

B.SC. IST YEAR

PHYSICS

SEMESTER-I & II

[Effective from 2013-14 & onwards]

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
B. Sc. I Year Physics Syllabus
Semester I & II
(Revised syllabus Effective from June 2013)


Semester	Course Code	Paper	Title of Paper	Periods	Marks
I	Phy101	I	Mechanics, Properties of Matter and Sound	45	50
I	Phy102	II	Heat and Thermodynamics	45	50
I	Phy103	III	Practical	45	50
II	Phy104	IV	Geometrical and Physical Optics	45	50
II	Phy105	V	Electricity and Magnetism	45	50
II	Phy106	VI	Practical	45	50

Note: - Scheme of Practical Examination

Student should perform one experiment in semester-II from paper III+VI

Scheme of Practical Examination

Experiment- (75marks) + Oral (15marks) + Record book (10 marks) = 100 Marks


 30.1.2013
 Chairman
 BOS in physics

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
B. Sc. I Year Physics Syllabus
Semester I & II
(Revised syllabus Effective from June 2013)

Semester	Course Code	Paper	Title of Paper	Periods	Marks
I	Phy101	I	Mechanics, Properties of Matter and Sound	45	50
I	Phy102	II	Heat and Thermodynamics	45	50
I	Phy103	III	Practical	45	50
II	Phy104	IV	Geometrical and Physical Optics	45	50
II	Phy105	V	Electricity and Magnetism	45	50
II	Phy106	VI	Practical	45	50

Note: - Scheme of Practical Examination

Student should perform one experiment in semester-II from paper III+VI

Scheme of Practical Examination

Experiment- (75marks) + Oral (15marks) + Record book (10 marks) = 100 Marks

B. Sc. I Year Physics (Semester-I)
(Mechanics, Properties of Matter and Sound)
Course Code – Phy101
Paper – I

Periods – 45

Marks – 50

1. Mechanics: -

13 periods

Compound Pendulum- expression of time period, Interchangeability of centre of suspension and oscillation, Kater's Pendulum.

Newton's law of Gravitation (Statement only) , Gravitational Field , Gravitational Potential, Gravitational Potential of mass, Gravitational potential and field due to spherical shell and solid sphere (at a point, outside , inside and on the surface).

2. Elasticity: -

10 periods

Introduction , Moduli of Elasticity (Elastic constants) , Twisting couple on a cylinder, Bending of Beam – Bending moment, cantilever loaded at free end – (a) When weight of beam is ineffective, (b) When weight of beam is effective, Depression of Beam loaded at centre

3. Viscosity and Surface Tension: -

12 Periods

Viscosity - Introduction, energy of liquid in motion, Bernoulli's Theorem, practical applications: (i) Law of hydrostatic pressure (ii) Filter pump, Poiseuille's formula.

Surface Tension - Introduction, Difference of pressure across a curved surface, Determination of S.T. by Jaeger's method.

4. Ultrasonic and Acoustics: -

10 periods

Ultrasonic - Piezo – electric effect, Piezo – electric Generator, Magnetostriction effect, Magnetostriction oscillator, Applications of ultrasonic – Depth of sea, Chemical effects, Medical applications.

Acoustics - Reverberation, Acoustical demands of an auditorium, Sabine's Law – Derivation of Reverberation time, conditions of good acoustical designs of room.

References:-

- 1) Elements of Properties of Matter – D. S. Mathur
(S. Chand , 11 th edition , 1992)
- 2) Physics for Degree students – C. L. Arora and P.S.Heme
(S. Chand , 1 st edition 2010)
- 3) Mechanics and Electrodynamics – Brijlal ,N. Subrahmanyam , Jivan Seshan
(S.Chand , 7 th edition)
- 4) Text Book of sound – Khanna and Bedi
(Atma Ram and sons, 1989 edition)
- 5) Text Book of sound – N. Subrahmanyam and Brijlal
(Vikas Publishing House 2 nd Revised edition)

B. Sc. I Year Physics (Semester-I)
(Heat and Thermodynamics)
Course Code – Phy102
Paper – II

Periods – 45

Marks – 50

1) Thermal Conductivity: -

10 periods

Transference of heat, Coefficient of thermal conductivity, Rectilinear flow of heat along a metal bar, Methods of radial flow of heat-(i)spherical shell method and (ii)Flow of heat along the wall of a cylindrical tube, comparison of conductivities of different metals.

2) Real Gases and Transport Phenomena: -

12 periods

Real Gases – Introduction, Reason for modification of gas equation, Van der Waals equation of state , comparison with experimental curves, critical constants, constants of Van der Waals equation.

Transport phenomena–Introduction, Mean free path, sphere of influence, and expression for mean free path, variation of mean free path with temperature and pressure, transport phenomena, viscosity, Thermal conductivity (their interrelationship, dependence on temperature and pressure).

3) Thermodynamics: -

12 periods

Adiabatic process, Adiabatic equation of a perfect gas, Isothermal process, Indicator diagram, work done during isothermal process and adiabatic process, reversible and irreversible process, Second law of thermodynamics. (Kelvin and Clausius statement), Heat engines, Carnot's ideal heat engine, Carnot's cycle (work done and Efficiency).

4) Entropy and Thermodynamic relations: -

11 Periods

General notation of entropy, change of entropy is independent of path, change of entropy in reversible and irreversible process, Formulation of second law in terms of entropy, Maxwell's thermodynamical relations, Applications of Maxwell's relations –i) Clausius – Clapeyron equation , ii) T-ds equations.

Reference Books:-

- 1) Heat Thermodynamics and Statistical Physics - Brijlal, N.Subrahmanyam , P.S. Heme (S.Chand , 2007 Edition) .
- 2) Text Book of Heat and Thermodynamics–J. B. Rajam, C.L. Arora (S. Chand, 9th Edition)
- 3) Heat and Thermodynamics– S. S. Singhal, J. P. Agarwala, S.Prakash (Pragati Prakashan)
- 4) Thermodynamics & Statistical physics-S. L. Kakani

B. Sc. I Year Physics (Semester- II)
(Geometrical and Physical Optics)
Course Code – Phy104
Paper – IV

Periods – 45

Marks – 50

1) Geometrical Optics and Optical Instruments: - 12 periods

Cardinal points of optical system - Focal points, Principal points, Nodal points and corresponding planes, coaxial lens system - equivalent focal length and cardinal points.
Huygens's Eyepiece, Ramsden's eyepiece and their cardinal points,

2) Interference: - 10 periods

Interference in thin film due to reflected and transmitted light, wedge shaped thin film, Newton's rings by reflected light, determination of wavelength, Michelson's Interferometer, type of fringes, determination of wavelength and difference in wavelength.

3) Diffraction: 13 periods

Introduction, Diffraction at a thin wire, Fraunhofer diffraction at double slit (Interference and diffraction maxima, minima), Plane Transmission diffraction grating, Determination of wavelength (Normal incidence), Resolving power of optical instruments (Rayleigh's criterion), R. P. of prism and grating.

4) Polarization: - 10 periods

Introduction, Malus law, Double refraction, Huygens's theory of double refraction in uniaxial crystal, Nicol prism.
Optical activity, Fresnel's theory of optical rotation, specific Rotation, Laurentz's half – shade polarimeter, Determination of specific rotation of sugar solution.

Reference Books:-

- 1) Text Book of optics – N. Subrahmanyam & Brijlal (S. Chand, 1987 Edition)
- 2) Optics and Spectroscopy – R.Murugesan, K. Sivaprasath(S. Chand, 7 th Revised Edition)
- 3) A text book of optics- D. S. Mathur.
- 4) Optics- Ghatak. IInd edition.

B. Sc. I Year Physics (Semester- II)
(Electricity and Magnetism)
Course Code – Phy105
Paper – V

Periods – 45

Marks – 50

1) Vector Algebra : -

12Periods

Dot and cross product (Revision), scalar triple product and its geometrical interpretation, vector triple product, gradient of a scalar and its physical interpretation, Divergence and curl of vector function and their physical interpretation, line, surface and volume integrals, Gauss's divergence theorem and Stoke's theorem .

2) Electrostatics: -

13 Periods

Coulomb's Law , Electric field , field due to point charge, flux of electric field, Gauss's law (with proof) , Differential form of Gauss law , electric potential , potential due to a point charge, Potential and field due to electric dipole.

Dielectrics, polarization of dielectric, Gauss's law in dielectrics, Relation between **D**, **E** and **P**.

3) Magnetostatics: -

10 Periods

Magnetic field , Magnetic induction , magnetic flux , Biot-Savart law, Magnetic induction due to straight conductor carrying current , magnetic induction on the axis of solenoid ,Ampere's Law, Differential form Ampere's Law, Moving coil ballistic Galvanometer - expression for charge.

4) Transient Currents: -

10 periods

Growth and decay of current in a circuit containing L and R , charge and discharge of a capacitor through resistor, Growth and decay of charge in LCR circuit.

Reference Books: -

- 1) Mathematical Methods in physics – D.Biswas(New central book agency , 2009 edition)
- 2) Electricity and Magnetism – R.Murugeshan(S. Chand, 2008 edition)
- 3) Electrodynamics – Gupta, Kumar, Singh (Pragati Prakashan, Meerut, 18th edition 2005)
- 4) Foundations of Electromagnetic Theory-Ritz, Milford, Chirstey IIIrd edition.

B. Sc. I Semester
Physics paper III (Phy103)
List of experiment

1. Determination of acceleration due to gravity by Kater's pendulum.
2. Y by bending of a beam loaded at center.
3. Determination of Y by Cantilever (Oscillation method)
4. η by Maxwell's needle.
5. M.I. by bifilar suspension.
6. Determination of Y and η of the material of a flat spiral spring.
7. S.I. by Jaeger's method.
8. Determination of coefficient of viscosity by Poisseuille's method.

Note: - At least six experiments should be performed.

B.Sc. II Semester
Physics Paper VI (Phy106)
List of experiment

1. γ by Searle's apparatus.
2. M.I. of fly wheel.
3. Thermal conductivity of bad conductor by Lee's disc method.
4. Study of CRO
(Measurement of frequency and voltage sensitivity AC/DC.)
5. Field along axis of circular coil.
6. I-H curve.
7. Calibration of spectrometer.
8. Dispersive power of prism.

Note: - At least six experiments should be performed.

Additional activities

a. Demonstration of experiment

1. Signal generator and CRO (sine, Square wave signal, measurement of ac voltage and frequencies).
2. Spectrometer (Reading and scale, observe the spectrum, measure refractive index for different colors).
3. Electromagnetic induction using two coil.
4. Determination of least count and range for at least four measurement instruments.

b. Mini Project /Seminars/ Hands on activities.

1. Students should carry out one mini project or seminar.
2. Study of any two laboratory equipments.

c. Study tour (industrial/research institute)

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[1]	B.Sc. [Physics]	Semester- I & II,
[2]	B.Sc. [Dairy Science & Technology]	Semester- I & II,
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DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,
AURANGABAD.



REVISED SYLLABUS

OF

B.Sc. (Chemistry)
FIRST YEAR
SEMESTER SYSTEM

FIRST & SECOND SEMESTER

[Effective from - June, 2013-14 onwards]

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGBAD
B.Sc. (Chemistry) IN SEMESTER PATTERN FOR THREE YEAR DEGREE

YEAR	SEMESTER	PAPER NUMBER	PAPER TITLE	Hours	MARKS
First	I	Paper - I	Inorganic Chemistry	45	50
		Paper - II	Organic Chemistry	45	50
		Paper - III	Lab Course I	45	50
	II	Paper – IV	Physical Chemistry	45	50
		Paper – V	Inorganic Chemistry	45	50
		Paper – VI	Lab. Course – II	45	50
Second	III	Paper – VII	Organic Chemistry	3	50
		Paper – VIII	Physical Chemistry	3	50
		Paper - IX	Lab. Course-III	3	100
	IV	Paper – X	Inorganic Chemistry	3	50
		Paper – XI	Physical Chemistry	3	50
		Paper – XII	Lab. Course-IV	3	100
Third	V	Paper - XIII	Physical Chemistry	3	50
		Paper – XIV	Organic Chemistry	3	50
		Paper – XV	Lab. Course-V	3	100
	VI	Paper – XVI	Inorganic Chemistry	3	50
		Paper – XVII	Organic Chemistry	3	50
		Paper – XVIII	Lab. Course-VI	3	100

	Note : For Theory Paper 1 Credit = 15 Periods and for practicals paper 1 Credit = 30 periods
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B.Sc. Chemistry
(Three Year Degree Course)

<u>First Year</u>		<u>First Semester</u>
Paper I	Inorganic Chemistry	(45 Hrs) 3 Hrs. / Week
I	Atomic Structure	15 Hrs.
II	Periodic Properties	10 Hrs.
III	S - Block Elements	10 Hrs.
IV	P - Block Elements	10 Hrs.
Paper II	Organic Chemistry	(45 Hrs) 3 Hrs / Week
I	Structure and Bonding	06 Hrs.
II	Mechanism of Organic reactions	10 Hrs.
III	Stereo - Chemistry	10 Hrs.
IV	Alkanes	04 Hrs.
V	Alkenes	06 Hrs.
VI	Arenes and Aromaticity	05 Hrs.
VII	Alkyl and Aryl Halides	04 Hrs.
Paper III	Lab Course I	(45 Hrs.) 3 Hrs / Week

<u>First Year</u>		<u>Second Semester</u>
Paper-IV	Physical Chemistry	(45 Hrs) 3 Hrs. / Week
I	Mathematical Concepts	06 Hrs.
II	Gaseous State	08 Hrs.
III	Liquid State	06 Hrs.
IV	Solid State	07 Hrs.
V	Colloidal State	08 Hrs.
VI	Chemical Kinetics and Catalysis	10 Hrs.
Paper-V	Inorganic Chemistry	(45 Hrs) 3 Hrs / Week
I	Chemistry of Noble gases	05 Hrs.
II	Chemical Bonding	20 Hrs.
III	Nuclear Chemistry	10 Hrs.
IV	Theory of volumetric analysis.	10 Hrs.
Paper-VI	Lab Course-II	(45 Hrs.) 3 Hrs / Week

First Semester

Paper I	Inorganic Chemistry	(45 Hrs) 3 Hrs. / Week
I	<u>Atomic Structure:</u>	15 Hrs.
	Atomic orbital's, Quantum numbers, Heisenberg uncertainty principle, shapes of s, p, d orbital's. Aufbau and Pauli exclusion principles. Hund's multiplicity rule. Electronic configurations of the elements, Bohr's atomic model (Qualitative aspect only).	
II	<u>Periodic Properties:</u>	10 Hrs.
	Atomic and Ionic radii, Ionization Energy, Electron affinity and Electro negativity. Trends in periodic table and application in predicting and explaining the chemical behavior.	
III	<u>S-Block Elements:</u>	10 Hrs.
	Comparative study, diagonal relationship, salient features of hydrides, solvation and complexation tendencies including their functions in biosystems.	
IV	<u>P - Block Elements:</u>	10 Hrs.
	Comparative Study (including diagonal relationship) of groups 13-17 elements, compounds like hydrides oxides of groups 13-16. Interhalogen compounds and its types.	

First Semester

Paper-II	Organic Chemistry	(45 Hrs) 3 Hrs. / Week
I.	<u>Structure and Bonding:</u>	6 Hrs.
	Localized and delocalized chemical bond; charge transfer complexes, resonance, hyper conjugation, inductive effect, hydrogen bonding, conjugative effect, steric effect.	
II	<u>Mechanism of Organic Reactions:</u>	10 Hrs.
	Homolytic and heterolytic bond breaking. Types of reagents electrophiles and nucleophiles. Types of organic reactions. Energy considerations. Reactive intermediates - carbocations, carbanions, free radicals (with two examples each).	
III	<u>Stereochemistry of Organic Compounds :</u>	10 Hrs.
	<ul style="list-style-type: none">• Concept of Isomerism - Types of isomerism• Optical Isomerism - elements of symmetry, molecular chirality, enantiomers, stereogenic centre, optical activity, properties of enantiomers, chiral and achiral molecules with two stereogenic centres, diastereomers, threo and erythro diastereomers, meso compounds.• Relative and absolute configuration, sequence rules, D and L and R and S systems of nomenclature.• Geometric Isomerism - Determination of configuration of geometric isomers. E and Z system of nomenclature, geometric isomerism in oximes and alicyclic compounds.	
IV	<u>Alkanes :</u>	04 Hrs.
	Methods of formation (Koble reaction, Corey - House reaction and decarboxylation of carboxylic acids)	
	Physical properties and Chemical reactions of alkanes	
	Chlorination, Nitration, Sulphonation, Catalytic oxidation.	

- V Alkenes :** **6 Hrs.**
Nomenclature of alkenes, methods of formation, mechanisms of dehydration of alcohols and dehydrohalogenation of alkyl halides. The Saytzeff rule, Hofmann elimination, physical properties and relative stabilities of alkenes. Chemical reactions of alkenes - mechanisms involved in hydrogenation, electrophilic and free radical additions, Markownikoff's rule, hydroboration and oxidation with KMnO_4 . Polymerization of alkenes with one example each.
- VI Arenes and Aromaticity:** **5 Hrs.**
Nomenclature of benzene derivatives. The aryl group. Aromatic nucleus and side chain structure of benzene : molecular formula and Kekule structure. Resonance Structure, MO Picture.
Aromaticity : The Huckel rule, aromatic ions
Aromatic electrophilic substitution: General Pattern of the mechanism (Nitration, halogenations and Sulphonation) and Friedel Crafts reaction.
- VII Alkyl and Aryl halides:** **4 Hrs.**
Polyhalogen Compounds: Chloroform, Carbon tetrachloride. Methods - formation of aryl halides, nuclear and side chain reaction.

First Semester

Paper-III	Lab Course-I	45 Hrs. 3 Hrs / Week
I	Volumetric Analysis :	10 Hrs.
	<ul style="list-style-type: none"> • Preparation of 0.1N. NaOH solution and its standardization by given oxalic acid solution. • Preparation of 0.1 N oxalic acid solution and its standardization by given KMnO_4 solution. 	
II	Inorganic Qualitative Analysis :	15 Hrs.
	<ul style="list-style-type: none"> • Identify two acid and two basic radical from the given binary mixture. <p>a] $\text{CdSO}_4 + \text{NH}_4\text{Cl}$ b] $\text{BaCO}_3 + \text{Al}_2(\text{NO}_3)_3$ c] $\text{ZnCO}_3 + \text{KBr}$ d] $\text{MnCO}_3 + \text{MgSO}_4$ e] $\text{NiSO}_4 + \text{MgCO}_3$</p>	
III	Physical Chemistry	20 Hrs.
	<ul style="list-style-type: none"> • Eudiometer : Determination of Equivalent weight of mg. • Viscometer : To Determine Viscosity of given liquid (Water / Ethanol) by viscometer . • Staglanometer: To determine surface tension of given liquid. • Chemical Kinetics: *To study the effect of acid strength on the hydrolysis of an ester. *To determine the specific reaction rate of the hydrolysis methyl / ethyl acetate catalyzed by hydrogen ions at room temperature. <p>Colorimeter :- Verification of Lambert-Beer's law using Spectrophotometer. [Colorimeter].</p>	

Second Semester

Paper- IV	Physical Chemistry	(45 Hrs) 3 Hrs. / Week
I	<u>Mathematical Concepts :</u>	06 Hrs.
	Logarithmic relations, curve sketching, linear graphs and calculation of slopes, differentiation of functions like $k^x e^x$, x^n , $\sin x$, $\log x$; maxima and minima, partial differentiation.	
II	<u>Gaseous States:</u>	08 Hrs.
	Postulates of kinetic theory of gases, kinetic gas equation, Deduction of Gas Laws : Boyles Law, Charles Law, Grahams Law of diffusion, Avogadro's hypothesis, deviation from ideal behavior, van der Waals equation of state. Critical Phenomena : PV isotherms of real gases.	
III	<u>Chemicals Kinetics and Catalysis:</u>	10 Hrs.
	Chemical Kinetics and its scope, rate of reaction, factors influencing the rate of reaction - concentration, temperature, pressure, solvent, light, catalyst concentration dependence of rates. Derivation of rate law and characteristics of simple chemical reactions - zero order, first order, second order, Pseudo order, half life. Effect of temperature on rate of reaction. Arrhenius equation, concept of activation energy. Catalysis : Definition, types, and characteristics of catalysis, homogeneous, heterogeneous catalysis - Enzyme catalysis and its application.	
IV	<u>Liquid State:</u>	6 Hrs.
	Intermolecular forces, structure of liquids (a qualitative description). Difference between solids, liquids and gases. Liquid Crystals: Classification, structure of nematic and cholesteric phases.	

- V Solid State :** **7 Hrs**
- Types of solids, Amorphous, crystalline and difference between them, Miller Indices.
- Laws of crystallography - (i) Law of constancy of interfacial angles (ii) Law of rationality of indices (iii) Law of symmetry. Symmetry elements in crystals. X-ray diffraction by crystals. Derivation of Bragg equation.
- VI Colloidal State :** **8 Hrs**
- Definition of colloids, classification of colloids.
 - Solids in liquids (sols) : properties - kinetic, optical and electrical; stability of colloids, protective action. Hardy - Schulze Law.
 - Liquids in liquids (emulsions) : types of emulsions, preparation.
 - Liquids in Solids (gels) : classification, preparation and properties, general applications of colloids.

Second Semester

Paper-V	Inorganic Chemistry - II	45 Hrs 3 Hrs. / Week
I	<u>Chemistry of noble gases :</u> Chemical properties of the noble gases, chemistry of xenon, structure and bonding in xenon compounds.	5 Hrs.
II	<u>Chemical Bonding:</u> (A) <u>Covalent Bond</u> - Valence theory and its limitations, directional characteristic of covalent bond, various types of hybridization and shapes of simple inorganic molecules and ions, Valence shell electron pair repulsion (VSEPR) theory of NH ₃ , SF ₄ , ClF ₃ , ICl ₂ and H ₂ O. MO theory, homonuclear (He, N ₂ and O ₂) and heteronuclear (CO and NO) diatomic molecules, bond strength and bond energy, percentage ionic character from dipole moment and electro negativity difference. (B) Ionic Bonds - Definitions, Factors affecting ionic bond formation. (C) Hydrogen bonding, Van-der-Waals forces, Metallic bond and its free electron concept.	20 Hrs.
III	<u>Nuclear Chemistry:</u> Definition; Atomic number, mass number, Isotopes, Isobars mass defect and Binding Energy, Packing fraction N/Z ratio, Radio activity, properties of α , β and γ , Artificial transmutation. Applications with respect to trans-uranic elements, carbon dating.	10 Hrs.
IV	<u>Theory of volumetric Analysis:</u> Types of titrations, volumetric apparatus, calibration of pipette and burette. Indicators used in pH - titrations, oxidizing agents used in titrations. Theory of Internal, External and self indicators for redox titration.	10 Hrs.

**First Semester / Second Semester
Question Paper Pattern for Practical**

Lab. Course-I+II
Paper-III+VI

Time : 06 Hrs.
Max. Marks : 100.

- | | | | |
|------|----|--|---------------|
| Q.1. | a) | Inorganic Volumetric Analysis. | ... 10 Marks |
| | b) | Inorganic Qualitative Analysis. | ... 20 Marks |
| Q.2. | a) | Organic Qualitative Analysis | ... 20 Marks |
| | b) | Organic Estimation. | ... 10 Marks |
| Q.3. | a) | Eudiometer / Viscometer / Staganometer | ... 15 Marks |
| | b) | Kinetics (Hydrolysis) / Spectrophotometer
(Colorimeter) | ... 15 Marks |
| Q.4. | | Record Book and Viva-Voce | ... 10 Marks. |

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S-25 March, 2013 AC after Circulars from Circular No.153 & onwards

- 17 -

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.

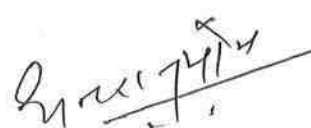
These syllabi are available on the University Website **www.bamu.net**

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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S-25 March, 2013 AC after Circulars from Circular No.153 & onwards

- 18 -

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

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- 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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S*/-080513/-

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



Syllabus

**B.A./B.Sc. Mathematics
Semester – I & II
(With Effect from June 2013)**

Syllabus

B.A. / B.Sc. (Mathematics) Semester- I (With effect from June 2013)

MAT 101: Differential Calculus

Marks : 50.

1. Prerequisite:

Functions: Domain and range of a function, independent and dependent variables, polynomial functions and rational functions, constant functions and identity functions, one-one functions, onto function, invertible functions, composite function. [1]

Limit and Continuity: Limit of a function, left handed and right handed limits, non existence of limit, theorems on limits (statements only), theorems on continuity (statements only), discontinuity, types of discontinuity. [1]

2. Differentiations:

Derivative of a function, derived function, derivability implying continuity, geometrical interpretation of a derivative, hyperbolic functions, derivatives of hyperbolic and inverse hyperbolic functions, logarithmic differentiation, derivative of implicit functions. [1]

3. Successive Differentiation:

Higher order derivatives, calculation of n th derivatives, some standard results, determination of n th derivative of rational functions, the n th derivatives of the products of the powers of sines and cosines, Leibnitz's theorem: n th derivative of the product of two functions.[1]

4. Mean Value Theorems:

Rolle's Theorem, Lagrange's mean value theorem, meaning of the sign of the derivative, Cauchy's mean value theorem, higher derivatives, Taylor's theorem, Maclaurin's theorem, Maclaurin's power series for a given function. [1]

5. Partial Differentiation:

Function of two variables, limit of a function of two variables, continuity of a function of two variables at a point, limit of a continuous function, partial derivatives, partial derivatives of higher order, homogeneous function, Euler's theorem on homogeneous function, total differentials, differentiation of composite function and implicit function.[1].

6. Prerequisite:

Scalar product of two vectors, sign of the scalar product, length of a vector as a scalar product, angle between two vectors, commutativity, distributivity, right handed and left handed vector triads, vector product, some properties of vector product, scalar triple product, distributive law, some properties of scalar triple product, vector triple product.[2]

7. Differential Operators:

Point Functions: scalar valued point functions, vector valued point functions, limits and continuity, directional derivatives, Cartesian representation of point functions and their directional derivatives, directional derivatives of point functions along co-ordinate axes and along any line, gradient of a scalar point function, character of gradient as a point function, the operator ∇ , operator $a \cdot \nabla$, divergence and curl, gradient, divergence and curl of sums and product. [2]

Text Book:

[1]. Shanti Narayan: Differential Calculus, Shyamlal Charitable Trust, 2004

Scope:

Chapter 2: Articles 2.1, 2.11, 2.12, 2.31, 2.32, 2.4, 2.42, 2.5

Chapter 3: Articles 3.2, 3.21, 3.22, 3.3, 3.6, 3.61, 3.62, 3.8, 3.81

Chapter 4: Articles 4.1, 4.11, 4.12, 4.14, 4.15, 4.7, 4.71, 4.72, 4.9, 4.10

Chapter 5: Complete

Chapter 7: Articles 7.1, 7.2, 7.3, 7.5, 7.6, 7.61

Chapter 10: Articles 10.1, 10.2, 10.3, 10.4, 10.41, 10.5, 10.51, 10.6, 10.61, 10.8, 10.81, 10.9, 10.91, 10.93, 10.94

[2]. Shanti Narayan and P. K. Mittal : Vector Analysis, S. Chand and Company Ltd, 2007.

Scope:

Chapter 3: Articles 3.1, 3.1.1 to 3.1.9, 3.1.10 (statements only)

Chapter 5: Articles 5.2, 5.2.1, 5.3, 5.3.1 to 5.3.3, 5.3.4, 5.3.5, 5.3.6, 5.3.7, 5.5, 5.5.1, 5.6, 5.7, 5.7.1 to 5.7.3, 5.8

Chapter 10: Articles 10.1, 10.1.1 to 10.1.2, 10.2, 10.2.1 to 10.2.3, 10.3, 10.3.1 to 10.3.2, 10.4, 10.4.1 to 10.4.2, 10.5, 10.6, 10.7, 10.7.1 to 10.7.2, 10.9, 10.10, 10.11, 10.12, 10.12.1 to 10.12.2, 10.14, 10.15 (results 1 to 6).

Note: Questions on prerequisite may not be asked.

MAT 102: Differential Equations

Marks: 50

1. Prerequisite:

Ordinary and partial differential equations, order and degree of Differential equations, Solutions: general, particular, singular.

2. Equations of The First Order and of The First Degree:

Exact differential equations, Linear equations, Equations reducible to the linear form.

3. Linear Equations with Constant Coefficients:

Linear equations, complementary functions, particular integral, complete integral, The linear equations with constant coefficients and second member zero, case of auxiliary equation having equal roots, case of auxiliary equation having imaginary roots, the symbol D , the linear equation with constant coefficients and second member a function of x , the symbolic function $1/f(D)$, methods of finding the particular integral, short methods of finding particular integrals corresponding to the terms e^{ax} , x^m , $\sin ax$, $\cos ax$, $e^{ax}V$ and xV in the second member.

4. Linear Equations with Variable Coefficients:

The homogeneous linear equation, methods of finding solution, the symbolic functions $f(\theta)$ and $1/f(\theta)$, methods of finding the particular integral, integral corresponding to a term of form x^m in the second member, equations reducible to homogeneous linear form.

5. Exact Differential Equations and Equations of Particular Forms:

Exact differential equations, criterion of an exact differential equation, the integration of an exact equation: first integral, equations of the form $\frac{d^n y}{dx^n} = f(x)$, equation of the form

$$\frac{d^2 y}{dx^2} = f(y).$$

6. Ordinary Differential Equations with More Than Two Variables:

Simultaneous differential equations which are linear, simultaneous equations of the First order.

7. Partial Differential Equations:

Definitions, derivation of a partial differential equation by the elimination of constants,,
Derivation of a partial differential equation by the elimination of arbitrary functions.

Text Book:

D. A. Murray : Introductory Course in Differential Equations, Khosla Publishing House, New Delhi, 2003.

Scope:

Chapter 1: Articles 1, 2, 4

Chapter 2: Articles 11, 12,13,20,21

Chapter 6: Articles 49 to 53, 56 to 64

Chapter 7: Articles 65 to 71

Chapter 8: Articles 73 to 77

Chapter 11: Articles 98, 99

Chapter 12: Articles 107, 108, 109

Note: Questions on prerequisite may not be asked.

Syllabus

B.A / B.Sc. (Mathematics) Semester- II

MAT 201: Integral Calculus :

Marks: 50.

1. Methods of Integration:

Reduction formulae. [1]

2. Integration of Algebraic Rational Functions:

Case of non-repeated linear factors, case of non-repeated linear or repeated linear factors, case of linear or quadratic non repeated factors [1]

3. Integration of Trigonometric Functions:

Integration of $\sin^n x$, $\cos^n x$ and reduction formulae for integration of $\sin^n x$, $\cos^n x$ [1]

4. Definite Integral as The Limit of a Sum:

Introduction, fundamental theorem.[1]

5. Areas of Plane Regions:

Areas of a region bounded by a curve, x -axis and two ordinates.[1]

6. Rectification, Length of Plane Curves:

Introduction, expression for lengths of curves $y = f(x)$, expressions for lengths of arc $x = f(y)$; $x = f(t)$, $y = \phi(t)$; $r = f(\theta)$. [1]

7. Volumes and Surfaces of Revolution:

Introduction, expressions for the volume obtained by revolving about either the axis [1]

8. Integral Transformation:

Introduction, line integrals, circulation, irrotational vector point functions, surface integrals, volume integrals, reduction of volume to surface integral, physical interpretation of Gauss theorem, reduction of surface to line integrals, condition for irrotational vector functional, Green's theorem.[2]

Text Books:

[1]. Shanti Narayan : Integral Calculus, S. Chand and Company Limited 1999.

Scope:

Chapter 2: Articles 2.8

Chapter 3: Articles 3.1 to 3.4

Chapter 4: Articles 4.1, 4.2

Chapter 6: Articles 6.1, 6.2

Chapter 7: Articles 7.1

Chapter 8: Articles 8.1, 8.2, 8.3, 8.31

Chapter 9: Articles 9.1, 9.2

[2]. Shanti Narayan and P. K. Mittal : Vector Analysis, S. Chand and Company Ltd, 2007.

Scope:

Chapter 11: Articles 11, 11.1, 11.1.1 to 11.1.2, 11.2, 11.2.1, 11.3, 11.3.1, 11.5, 11.6, 11.7, 11.8, 11.9, 11.11.

Note: Questions on prerequisite may not be asked.

MAT 202: Geometry

Marks:50.

1. The Plane:

Equations of the first degree in x, y, z , transformation to the normal form, determination of plane under given conditions, equations of the plane through three given points, systems of planes, two sides of a plane, length of the perpendicular from a point to a plane, bisectors of angles between two planes, joint equation of two planes.

2. Right Line:

Equations of a line, equations of a straight line in terms of its direction cosines and the co-ordinates of a point on it, equations of a line through two points, symmetrical and unsymmetrical forms of the equations of a line, transformation of the equations of a line to the symmetrical form, angle between a line and a plane, the condition that a given line may lie in a given plane, the condition that two given lines are coplanar, number of arbitrary constants in the equations of a straight line, sets of conditions which determine a line, the shortest distance between two lines, the length and equations of the line of shortest distance between two straight lines, length of perpendicular from a given point to a given line.

3. Sphere:

Definition and equation of the sphere, equation of the sphere through four given points, plane section of a sphere, intersection of two spheres, equation of a circle, sphere through a given circle, intersection of a sphere and a line, equation of a tangent plane.

4. Cones, Cylinders:

The right circular cone, equation of a right circular cone, the right circular cylinder, equation of a right circular cylinder.

5. The Conicoid:

Central conicoids, intersection of a line and a central conicoid, tangent lines and tangent plane at a point, condition that a plane may touch a central conicoid.

Text Book:

[1] Shanti Narayan: *Analytical Solid Geometry*, S. Chand and Company Ltd, New Delhi, 1998

Scope:

Chapter 2: Articles 2.1, 2.3, 2.31, 2.32, 2.4, 2.41, 2.42, 2.5, 2.6, 2.7, 2.71, 2.8

Chapter 3: Articles 3.1, 3.11, 3.12, 3.13, 3.14, 3.2 to 3.5, 3.51, 3.6, 3.61, 3.7

Chapter 6: Articles 6.11, 6.12, 6.13, 6.2, 6.31, 6.32, 6.4, 6.41, 6.5, 6.6

Chapter 7: Articles 7.61, 7.62, 7.81, 7.82

Chapter 8: Articles 8.24, 8.3, 8.31, 8.32



(Dr. B. R. SONTAKKE)

Chairman, Board of Studies in Mathematics
Dr. Babasaheb Ambedkar Marathwada University,
Aurangabad

8-25 March, 2013 AC after Circulars from Circular No.153 & onwards

- 17 -

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,
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[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.

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University Campus,
Aurangabad-431 004.
REF.NO.ACAD/NP/B.SC.-1ST YEAR/
Sem-I & II/2013/5132-541
A.C.S.A.I.No.327[2].

Date:- 08-05-2013.

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Sunil J. J.
Director,
Board of College and
University Development.

..2..

8-25 March, 2013 AC after Circulars from Circular No.153 & onwards

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Dr. Babasaheb Ambedkar Marathwada University,
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8/080513/

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



Revised Syllabus of
B.SC. 1ST 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 Alexopoulos 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) Lycopsidea - *Lycopodium*, *Selaginella* (12)c) Sphenopsida - *Equisetum* (06)d) Pteropsida - *Marsilea* (07)

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

Unit - 1 Histology:	45 L.
a) Types of tissue:	
i. Meristematic tissue – Meristem, structure and types based on origin and position.	(03)
ii. Permanent tissues: Simple, Complex and Secretory	(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
(Diversity of Cryptogams – II & Histology, Anatomy and Embryology)
Diversity of Cryptogams – II**

45L

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 secretory
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.

S*/-170313/-
S*/-110513/-

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

**Faculty of Science
Practical Examination
B. Sc. I YEAR (BOTANY)
Semester - I and II
Paper - III & VI**

**(Diversity of Cryptogams I, Morphology of Angiosperms, Diversity of
Cryptogams II and Histology, Anatomy and Embryology).**

Time: 4 Hour Max.

Marks: 100

Date: _____

Batch No. _____

Center: _____

- Q.1. Identify, classify and describe any two algae from the given mixture. 10
- Q.2. Identify, classify and describe the given specimen of fungi. 10
- Q.3. Identify, classify and describe the given specimen (Bryophytes) on the basis of external and internal features. 10
- Q.4. Prepare temporary slide of the given specimen (Pteridophytes). Draw well labeled diagram. 10
- Q.5. Prepare a double stained permanent preparation of the given specimen. Identify and Draw a well-labeled diagram. 20
- Q.6. Identify and describe the specimen A, B, C, D and E as per the instructions 15
(A-Bacteria/Lichen, B- Morphology, C- Morphology, D-Histology, E- Embryology).
- Q.7. Submission:
- a) Record book, 10
- b) Viva - voce 05
- b) Collection, Tour report and field report 10

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद**परिपत्रक क्रमांक/एस.यु./विज्ञान/अभ्यासक्रम/७४/२०१४**

या परिपत्रकाद्वारे सर्व संबंधितांना सुचित करण्यात येते की, विज्ञान विद्याशाखेने शिफारस केल्यानुसार बी. एस्सी. / एम. एस्सी. प्रथम व द्वितीय वर्षाच्या सुधारित अभ्यासक्रमास आणि बी. एस्सी. प्रथम वर्षाच्या अभ्यासक्रमात किरकोळ बदल करण्यास विद्यापरिषदेच्या वतीने मा. कुलगुरु यांनी, त्यांना प्राप्त असलेल्या विशेष अधिकार महाराष्ट्र विद्यापीठ अधिनियम-१९९४ कलम १४(७) अन्वये मान्यता दिलेली आहे. त्या अनुषंगाने सुधारीत तयार केलेल्या अभ्यासक्रमाची प्रत या परिपत्रकासोबत आपल्या पुढील कार्यवाहीसाठी पाठविण्यात येत आहे.

[1]	B.Sc. Physics	Semester-III & IV,
[2]	B.Sc. Chemistry	Semester-III & IV,
[3]	B.Sc. Botany	Semester-III & IV,
[4]	B.Sc. Zoology with minor changes	Semester-I & II,
[5]	B.Sc. Zoology	Semester-III & IV,
[6]	B.Sc. Fisheries	Semester-III & IV,
[7]	B.Sc. Electronics (Opt.)	Semester-III & IV,
[8]	B.A./B.Sc. Mathematics	Semester-III & IV,
[9]	B.Sc. Computer Science	Semester-I & II,
[10]	B.Sc. Information Technology	Semester-I & II,
[11]	B.C.A.	Semester-I & II,
[12]	B.Sc. Computer Science(Opt.)	Semester-I & II,
[13]	B.Sc. Information Technology(Opt.)	Semester-I & II,
[14]	B.Sc. Computer Application(Opt.)	Semester-I & II,
[15]	B.Sc. Computer Maintenance(Opt.)	Semester-I & II,
[16]	B.Sc. Biotechnology (Progressively)	Semester-I to VI,
[17]	B.Sc. Biotechnology (Opt.) (Progressively)	Semester-I to IV,
[18]	B.Sc. Sericulture Technology	Semester-I & II,
[19]	B.Sc. Networking Multimedia	Semester-III & IV,
[20]	B.Sc. Bioinformatics	Semester-I & II,
[21]	B.Sc. Hardware & Networking	Semester-I & II,
[22]	B.Sc. Animation	Semester-I & II,
[23]	B.Sc. Dairy Science & Technology	Semester-III & IV,
[24]	B.Sc. Biochemistry	Semester-III & IV,
[25]	B.Sc. Analytical Chemistry	Semester-III & IV,
[26]	B.Sc. Textile & Int. Decoration with minor changes	Semester-I & II,
[27]	B.Sc. Textile & Int. Decoration	Semester-III & IV,
[28]	B.Sc. Home Science with minor changes	Semester-I & II,
[29]	B.Sc. Home Science	Semester-III & IV,
[30]	B.Sc. Agro.Chem. & Fertilizers	Semester-III & IV,

S-29 Nov., 2013 AC after Circulars from Circular No.55 & onwards

- 42 -

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[31]	B.Sc. Geology	Semester-III & IV,
[32]	B.A. Statistics with minor changes	Semester-I & II,
[33]	B.A. Statistics	Semester-III & IV,
[34]	B.Sc. Statistics with minor changes	Semester-I & II,
[35]	B.Sc. Statistics	Semester-III & IV,
[36]	B.Sc. Industrial Chemistry	Semester-III & IV,
[37]	B.Sc. Horticultural	Semester-I & II,
[38]	B.Sc. Dry land Agriculture	Semester-I & II,
[39]	B.Sc. Microbiology	Semester-III & IV,
[40]	M.Sc. Computer Science	Semester-I to IV,
[41]	M.Sc. Information Technology	Semester-I to IV.

हा सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाचा आराखडा शैक्षणिक वर्ष २०१४-१५ करिता मर्यादित असेल व विद्यापरिषदेच्या अंतिम मान्यतेनंतर हे परिपत्रक नियमित ठेवण्याबाबत या कार्यालयाद्वारे नवीन परिपत्रक पारीत करण्यात येईल. तसेच सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाची प्रत विद्यापीठाच्या संकेतस्थळावर उपलब्ध आहे.

करिता, या परिपत्रकाची सर्व संबंधितांनी नोंद घ्यावी.

विद्यापीठ प्रांगण,
औरंगाबाद-४३१ ००४.
संदर्भ क्र.एस.यु./सा.शा./सबवि /२०१३-१४/
६५९९-७०२
दिनांक :- २७-०५-२०१४.

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संचालक,
महाविद्यालये व विद्यापीठ
विकास मंडळ.

या परिपत्रकाची एक प्रत :-

- १) मा. परिक्षा नियंत्रक, परिक्षा विभाग,
- २) मा. प्राचार्य, सर्व संलग्नीत महाविद्यालये,
- ३) संचालक, युनिक यांना विनंती करण्यात येते की, सदरील अभ्यासक्रम विद्यापीठाच्या संकेतस्थळावर उपलब्ध करुण देण्यात यावेत.
- ४) संचालक, ई-सुविधा केंद्र, विद्यापीठ परिसर,
- ५) जनसंपर्क अधिकारी, मुख्य प्रशासकीय इमारत,
- ६) कक्ष अधिकारी, पात्रता विभाग, मुख्य प्रशासकीय इमारत,
- ७) कक्ष अधिकारी, बी.ए. / बी.एससी./ बी.सी.एस./एम.एससी. विभाग, परीक्षा भवन,
- ८) अभिलेख विभाग, मुख्य प्रशासकीय इमारती मागे,
डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद.

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



B.Sc. First Year

Zoology [Optional]

With minor Changes

First and Second Semester

Effective from 2014-2015

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.
B.Sc. Zoology Pattern in Semester System

B. Sc. I Year Zoology

Semester	Course Code	Paper No.	Title of Paper	Marks
I	ZOL-101	Paper – I	Protozoa to Annelida	50
	ZOL-102	Paper – II	Cell Biology	50
	ZOL-103	Paper – III	Practical based upon Paper I & II	50
II	ZOL-201	Paper – IV	Arthropoda to Echinodermata And Protochordata	50
	ZOL-202	Paper – V	Genetics - I	50
	ZOL-203	Paper – VI	Practical based upon Paper IV & V	50

B. Sc. II Year Zoology

III	ZOL-301	Paper – VII	Vertebrate Zoology	50
	ZOL-302	Paper – VIII	Genetics- II	50
	ZOL-303	Paper – IX	Practical based upon Paper VII	50
	ZOL-304	Paper – X	Practical based upon Paper VIII	50
IV	ZOL-401	Paper – XI	Animal Physiology (Special Emphasis on Mammals)	50
	ZOL-402	Paper – XII	Biochemistry & Endocrinology	50
	ZOL-403	Paper – XIII	Practical based upon Paper XI	50
	ZOL-404	Paper – XIV	Practical based upon Paper XII	50

B. Sc. III Year Zoology

V	ZOL-501	Paper –XV	Ecology		50
	ZOL-502	Pape XVI (Elective)	A	Fishery sciences –I	50
			B	Animal culture –I	
			C	Entomology-I	
			D	Parasitic protozoa & helminthes-I	
			E	Computer Application & Laboratory Technology-I	
			F	Biotechnology-I	
			G	Dairy sciences -I	
			H	Poultry Sciences -I	
ZOL-503	Paper XVII	Practical based upon Paper XV		50	
ZOL-504	Paper XVIII	Practical based upon Paper XVI		50	
VI	ZOL-601	Paper XIX	Evolution		
	ZOL-602	Paper XX	A	Fishery sciences –II	50
			B	Animal culture –II	
			C	Entomology-II	
			D	Parasitic protozoa & helminthes-II	
			E	Computer Application & Laboratory Technology-II	
			F	Biotechnology-II	
			G	Dairy sciences -II	
			H	Poultry Sciences -II	
ZOL-603	Paper XXI	Practical based upon Paper XIX		50	
ZOL-604	Paper XXII	Practical based upon Paper XX		50	

B. Sc. First Semester
Course Code - ZOL- 101
Zoology Paper: I
PROTOZOA TO ANNELIDA

1.	Introduction to animal kingdom Definition of Zoology, Outline classification Protozoa, Parazoa, Metazoa and Major Phyla.	03
2.	Protozoa : - General characters <i>Plasmodium vivax</i> : - Structure of sporozoite, Life cycle; pathogenicity, Control, Prevention and Treatment of Malaria. <i>Entamoeba histolytica</i> : Structure, Life cycle and Control. <i>Euglena</i> : Morphology and Reproduction. <i>Paramecium</i> : Morphology and Reproduction	09
3.	Porifera : - General characters <i>Sycon</i> (Scypha): - Morphology, Different types of cells in sycon, canal system in Porifera.	08
4.	Coelenterata: - General characters <i>Obelia</i> : - Morphology of Obelia colony, Development of Hydra, Polymorphism in coelenterates.	06
5.	Helminths: - General characters <i>Fasciola hepatica</i> : - Structure, Life cycle, Pathogenicity & Control Measures <i>Taenia solium</i> : - Structure of scolex, Mature and gravid proglottids, Life cycle, pathogenicity, and control measures. <i>Ascaris lumbricoides</i> : - Structure of male & female, Life cycle, Pathogenicity & control measures.	12
6.	Annelida: - General characters <i>Leech</i> : - Morphology, Digestive, Excretory & Reproductive systems.	07
Total Periods: -		45

B. Sc. First Semester**Course Code - ZOL- 102****Zoology Paper: II****CELL BIOLOGY**

1. General structure of cell.	12
Structure of prokaryotic cell.	
Ultra structure of eukaryotic cell.	
Cell Cycle, Mitosis, Meiosis	
2. Organization of cell	20
A) Study of Various cell organelles	
Plasma Membrane: - Structure, unit membrane theory and function.	
Endoplasmic reticulum: - Structure and function.	
Golgi Bodies: - Structure and function	
Mitochondria: - Morphology, Ultra-Structure, function and biogenesis.	
Nucleus: - Structure and function.	
DNA Structure.	
Types of RNA	
Lysosome: - Structure, function and polymorphism	
Ribosome: - Structure and function	
B) Cytology of Cancer, Types of Cancer.	
3. Methods in Cell Biology (in brief)	13
A) Light Microscope	
Phase contrast microscope	
Electron microscope	
B) Micro techniques, (Microtomy) Fixation & Staining.	
Total Periods: -	45

Recommended books
Protozoa to Annelida

- Kotpal, R.L. Modern Text Book of Zoology Invertebrates, Rastogi Publication, Meerut.
 - Parker & Hashwell, Textbook of Zoology Vol. I (Invertebrates) A.Z.T.B.S. Publishers & Distributors. New Delhi.
 - E.L. JORDEN & P.S. VERMA, Invertebrate Zoology, S. Chand & Co. Ltd. New Delhi.
 - Hickman C. P. Jr., Hickman & L.S. Roberts. Integrated principles of zoology, Mosby college publication. St. Louis.
 - Ayur, E.K., And T.N. Ananthakrishnan, Manual of zoology Vol. I, Invertebrata, Part I and II S.Viswanathan (Printers and Publishers) Pvt. Ltd. Madras.
 - Balinsky, an Introduction to Embryology (CBS College Publishers).
 - Grant- Biology of Development Systems (Holt. Reihart, Winston).
 - Dr. S.S. Lal Practical Zoology Invertebrates 9th edition Rastogi Publications Meerut.
-

Cell biology

- Albert B. et.al - Molecular Biology of the cell (Sinauer)
- Lodish. H. et al – Molecular Cell Biology.
- Gupta P.K. Cell and Molecular Biology Rastogi Publication Meerut.
- Dr. S.P. Singh, Dr. B.S. Tomar, Cell Biology 9th revised edition Rastogi Publication Meerut.
- Gerald Karp Cell and Molecular biology- Concepts and Experiments. John Wiley, 2007.

B. Sc. First Semester**Course Code - ZOL- 103****Zoology Paper: III****PROTOZOA TO ANNELIDA & CELL BIOLOGY (PRACTICAL)**

1. Study of slides from Ciliates, Opalinates, and Flagellates(any five)	01
2. Study of museum specimen and slides from Porifera to Annelida. (Three from each phyla)	02
3. Dissection: Dissection of Leech for Digestive, Excretory & Reproductive systems. Dissection of Earthworm for Nervous System & Reproductive system	05
4. Mounting of any five of the following. Sponge spicules, Gemmule, Obelia colony, Jaws of Leech. Spermatoca, testes nerve ring of Earthworm, Parapodia of Nereis.	01
5. Study of cell organelles by using Models, Charts, Slides & Electron micrographs.	01
6. Squash preparation of Onion root tip to study Mitosis.	01
7. Preparation of polytene chromosome in chironomous larva/fruit flies.	01
8. Microtechnique: - Fixation, dehydration, Block preparation, Microtomy and Staining of Vertebrate tissue.	02
9. Study of Microscopy: - Simple, Compound, & Phase Contrast Microscope	01
Total Practical Periods: -	15

Pattern of Question Paper
B. Sc. First Semester
Course Code – ZOL- 101
Zoology Paper: I
PROTOZOA TO ANNELIDA

Time: 03:00 hours

Max. Marks: 50

- N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.
-

- | | |
|--|--|
| Q.1. Long answer question.
OR
Short Notes on:
a)
b) | Based on chapter 1 & 2
OR
Based on chapter 1 & 2 |
| Q.2. Long answer question.
OR
Short Notes on:
a)
b) | Based on chapter 3 & 4
OR
Based on chapter 3 & 4 |
| Q.3. Long answer question.
OR
Short Notes on:
a)
b) | Based on chapter 5&6
OR
Based on chapter 5&6 |
| Q.4. Long answer question.
OR
Short Notes on:
a)
b) | Based on all chapters
OR
Based on all chapters |
| Q.5. Multiple choice questions:
1)
2)
3)
4)
5)
6)
7)
8)
9)
10) | Based on all chapters |

Pattern of Question Paper**B. Sc. First Semester****Course Code – ZOL- 102****Zoology Paper: II****CELL BIOLOGY****Time: 03:00 hours****Max. Marks: 50**

- N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.
-

- | | |
|--|--|
| Q.1. Long answer question.
OR
Short Notes on:
a)
b) | Based on chapter 1
OR
Based on chapter 1 |
| Q.2. Long answer question.
OR
Short Notes on:
a)
b) | Based on chapter 2
OR
Based on chapter 2 |
| Q.3. Long answer question.
OR
Short Notes on:
a)
b) | Based on chapter 3
OR
Based on chapter 3 |
| Q.4. Long answer question.
OR
Short Notes on:
a)
b) | Based on all chapters
OR
Based on all chapters |
| Q.5. Multiple choice questions:
1)
2)
3)
4)
5)
6)
7)
8)
9)
10) | Based on all chapters |

B. Sc. Second Semester**Course Code – ZOL- 201****Zoology Paper: IV****ARTHROPODA TO ECHINODERMATA AND PROTOCHORDATA**

1. Arthropoda: - General characters	15
Prawn: - Structure, Digestive, Nervous, & Reproductive systems.	
Cockroach: External Characters, Digestive, Respiratory and Reproductive systems.	
2. Mollusca: - General characters	06
Pila: - External Characters, Respiratory, Circulatory, Nervous and Reproductive systems	
3. Echinodermata: - General characters	10
Asterias (Sea Star): - Morphology of oral & aboral view, Water vascular system, Reproductive system including development.	
4. General characters and Classification of Protochordata	14
Amphioxus: - External features, Digestive, Circulatory, Reproductive systems including development.	
Hemichordata: - General characters and affinities	
Herdmania: - General characters and morphology	
Total Periods: -	45

B. Sc. Second Semester**Course Code – ZOL- 202****Zoology Paper: V****GENETICS – I**

1. Elements of heredity & variation	04
Definition of genetics and variation	
Mendel's laws of heredity in short	
2. Gene interaction	05
Definition- modifications in Mendelian phenotypic ratio like,	
Epitasis	
Supplementary gene	
Complementary gene	
3. Multiple Alleles	05
Coat Colour in rabbit.	
ABO Blood group in man, Rh factor	
4. Cytoplasmic inheritance.	08
Definition of maternal effect. Coiling shell in snail (<i>Limnea peregra</i>)	
Male sterility.	
CO ₂ sensitivity in <i>Drosophila</i> .	
Kappa particles in <i>Paramecia</i> .	
5. Sex Determination	08
Chromosome theory in sex determination	
Genic balance theory of sex determination	
Triploid intersexes and Gynandromorphs in <i>Drosophila</i> .	
Sex linked inheritance: X linked and Y linked	
6. Mutation	15
Brief introduction	
Gene mutation: - Definition and classification	
Chromosomal aberration (structural & numerical)	
Spontaneous & induced mutation	

Total Periods: - 45

Recommended Books.**ARTHROPODA TO ECHINODERMATA &PROTOCHORDATA**

-
- Kotpal, R.L. Modern Text Book of Zoology Invertebrates, Rastogi Publication, Meerut.
 - Parker & Hashwell, Textbook of Zoology Vol. I (Invertebrates) A.Z.T.B.S. Publishers & Distributors. New Delhi.
 - E.L. JORDEN & P.S. VERMA, Invertebrate Zoology, S. Chand & Co. Ltd. New Delhi.
 - Hickman C. P. Jr., Hickman & L.S. Roberts. Integrated principles of zoology, Mosby college publication. St. Louis.
 - Ayur, E.K., And T.N. Ananthakrishnan, Manual of zoology Vol. I, Invertebrata,
 - Part I and II S.Viswanathan (Printers and Publishers) Pvt. Ltd. Madras.
 - Balinsky, An Introduction to Embryology (CBS College Publishers).
 - Grant- Biology of Development Systems (Holt. Reihart, Winston).
 - Dr. S.S. Lal Practical Zoology Invertebrates 9th edition Rastogi Publications Meerut.
-

GENETICS - I

- P.K. Gupta, Genetics- Rastogi Publications Meerut.
- P.K. Gupta, Genetics Classical to Modern- Rastogi Publications Merrut.
- Verma P.S. and V.K. Agarwal, Genetics, S.Chand and Publication.
- Levin O.D. and Lewin R. Biology of Gene McGraw Hill Troppan Co.Ltd.
- Gunther S. Stent. Molecular Genetics McMillan Publication Co.Inc.
- Goodenough V. Genetics New York, Holt Rinchart and Winston.
- Winchester, Genetics Oxford HBH Publication.
- Strikberger, Genetics McMillan Publication
- Sinnott Dunn and Dobzansky- Principles of Genetics

B. Sc. Second Semester**Course Code – ZOL- 203****Zoology Paper: VI****ARTHROPODA TO ECHINODERMATA AND PROTOCHORDATA & GENETICS – I
(PRACTICAL)**

-
- | | |
|--|-----------|
| 1. Study of museum specimen & slides of relevant Invertebrates & Protochordata. (At least 3 from each phyla) | 03 |
| 2. Dissections:
Dissection of Prawn for Nervous system
Dissection of Cockroach for Digestive and Nervous Systems.
Dissection of Pila for Nervous system.
Dissection of Sea Star for Water Vascular System. | 05 |
| 3. Mounting of any five of the following.
Mouthparts of Cockroach, Mosquito, House fly, Bed bug and Honeybee.
Salivary glands of cockroach.
Redula of Pila, Pedicillaria of Star fish. | 01 |
| 4. Culture of Drosophila- experimental organism in genetics
Observation of common mutants of drosophila | 01 |
| 5. Determination of human blood groups A, B, AB, and O, Rh factor. | 01 |
| 6. Major and minor problems in genetics | 04 |

Practical Periods: - 15

Pattern of Question Paper
B. Sc. Second Semester
Course Code – ZOL- 201
Zoology Paper: IV

ARTHROPODA TO ECHINODERMATA AND PROTOCHORDATA

Time: 03:00 hours

Max. Marks: 50

- N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.
-

- | | |
|--|--|
| Q.1. Long answer question.
OR
Short Notes on:
a)
b) | Based on chapter 1
OR
Based on chapter 1 |
| Q.2. Long answer question.
OR
Short Notes on:
a)
b) | Based on chapter 2 & 3
OR
Based on chapter 2 & 3 |
| Q.3. Long answer question.
OR
Short Notes on:
a)
b) | Based on chapter 4
OR
Based on chapter 4 |
| Q.4. Long answer question.
OR
Short Notes on:
a)
b) | Based on all chapters
OR
Based on all chapters |
| Q.5. Multiple choice questions:
1)
2)
3)
4)
5)
6)
7)
8)
9)
10) | Based on all chapters |

Pattern of Question Paper
B. Sc. Second Semester
Course Code – ZOL- 202
Zoology Paper: V
GENETICS - I

Time: 03:00 hours

Max. Marks: 50

- N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.
-

- | | |
|--|--|
| Q.1. Long answer question.
OR
Short Notes on:
a)
b) | Based on chapter 1 to 3
OR
Based on chapter 1 to 3 |
| Q.2. Long answer question.
OR
Short Notes on:
a)
b) | Based on chapter 4 & 5
OR
Based on chapter 4 & 5 |
| Q.3. Long answer question.
OR
Short Notes on:
a)
b) | Based on chapter 6
OR
Based on chapter 6 |
| Q.4. Long answer question.
OR
Short Notes on:
a)
b) | Based on all chapters
OR
Based on all chapters |
| Q.5. Multiple choice questions:
1)
2)
3)
4)
5)
6)
7)
8)
9)
10) | Based on all chapters |

Skeleton of question paper
B. Sc. I & II semester
Course Code - ZOL- 103 & 203
Zoology Paper: III + VI
PROTOZOA TO ECHINODERMATA
AND PROTOCHORDATA, CELL BIOLOGY AND GENETICS - I (PRACTICAL)

Time: - 4:00 hrs

Total marks:-100

-
- | | |
|---|-----------|
| Q.1. Dissect the.....so as to expose it'ssystem | 20 |
| Q.2. Mounting of squash preparation of Onion root tip, identify the stage and give the reasons | 10 |
| OR | |
| Mounting of Salivary glands from Chironomus larva / Fruit fly. | |
| Q.3. Mounting of the given material | 05 |
| Q.4. Genetics – Major problem | 15 |
| Q.5. Identify the given spots and comments on it
(Protozoa to Echinodermata & Protochordata, cell organelles and common mutants) | 30 |
| Q.6. Submission of permanent slides | 05 |
| Q.7. Record book | 10 |
| Q.8. Vivo-vice | 05 |

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B. Sc. III Semester
Course Code - ZOL- 301
PAPER: VII
VERTEBRATE ZOOLOGY

1. Agnatha:- Out line classification, general characters and affinities of Cyclostomata	02
2. Pisces : - Out line classification and general characters. <i>Scoliodon</i> : - External characters, Digestive system, Respiratory system, Blood Vascular System and Nervous System.	08
3. Amphibia: - Out line classification and general characters. Development of frog: - Fertilization Cleavage Blastula Gastulation and formation of germinal layers. Neotony in Amphibia Parental care in amphibia.	06
4. Reptilia: - Out line classification and general characters. <i>Calotes</i> :-External features, Respiratory system and Blood vascular system. Poisonous and non- poisonous snakes.	06
5. Aves: - Out line classification and general characters. <i>Columba livia</i> : - External features, Respiratory system, Embryology of chick.-Cleavage Blastula Gastulation and formation of germinal layers and extra embryonic membranes. Flight adaptation in birds. Migration in Birds.	10
6. Mammalia: - Out line classification and general characters. <i>Ratus ratus</i> : - External features, Blood Vascular System, Urino-genital System and Adaptive radiation in mammals. Placentation in Mammals.	13
Total Periods: -	45

B.Sc. III Semester
Course Code - ZOL- 302
PAPER: VIII
GENETICS – II

<p>1. Genes and its expression :-</p> <p style="padding-left: 20px;">Definition, concept and function of gene. Transcription of gene: - Initiation, elongation and termination. Genetic code:- Concept of codon, properties of genetic code Translation of gene: - Initiation, elongation and termination.</p>	08
<p>2. Population Genetics :-</p> <p style="padding-left: 20px;">Gene Pool., Gene Frequency. Herdy-weinberg's Law. Application of Herdy-weinberg's Law.</p>	05
<p>3. Human Genetics: -</p> <p style="padding-left: 20px;">Human chromosomes. Sex linked inheritance- X and Y Linked. Dizygotic and monozygotic twins. Inborn errors in metabolism: - PKU, Albinism. Genetic disorders:- Down's syndrome, Turners' syndrome, Klinefelter's syndrome. Use of human genetics in medical science: - Disease diagnosis Gene therapy and DNA finger printing.</p>	12
<p>4. Microbial Genetics: -</p> <p style="padding-left: 20px;">Transformation. Conjugation. Transduction.</p>	05
<p>5. Genetic Engineering: -</p> <p style="padding-left: 20px;">Introduction: - Definition, Concept and significance. Restriction enzymes: - Concept and types. Cloning vectors: - Plasmid, cosmid, phase. Construction of r-DNA. Application of r-DNA technology.</p>	10
Total Periods: -	45

RECOMMENDED BOOKS
VERTEBRATE ZOOLOGY

- A life of Vertebrate – K.Z.Young, ELBS Oxford University Press.
 - Modern Text Book of Zoology Vertebrate – R.L.Kotpal, Rastogi Publication Meerut.
 - A Text Book of Chordate Zoology – R.C.Dalela –Jaiprakashnath Publication Meerut.
 - Chordate Zoology – E.L.Jordan and P.S.Verma, S.Chand and Company New De
 - Zoology- S. A. Miller and J. B. Harley, Tata McGraw Hill.
 - Biological Science, 3rd Ed. D. J. Taylor, N. P. O. Green and G. W. Stout,
 - Cambridge Univ. Press. Low priced Ed.
 - Verma &Agarwal- chordate Embryology – S.Chand publication.
-

GENETICS-II

- Genetics. By Verma, PS and Agarwal, VK., S. Chand and Co., New Delhi
- Principles of Genetics. By Sinnott Dunn & Dobzhansky, Tata McGraw Hill, New Delhi, India.
- Genetics. By Gupta, PK., Rastogi Publications, Meerut
- Genetics. By Sarin, C., Tata McGraw Hill, New Delhi.
- Principles of Genetics. By Gardner, EJ, Simmons, MJ and Snustad, DP. John Wiley and sons
- Genetics-Strikberger, Macmillan Pub.
- Principles of Genetics- Tamarin, 7th Ed. Tata McGraw Hill.
- Genetics-- Winchester. Oxford IBH Pub
- Introductions genetic analysis – Griffith et.al.

B.Sc. III Semester
Course Code - ZOL- 303
PAPER: IX
VERTEBRATE ZOOLOGY (Practical)

1. Museum study of vertebrates. (At least 20).	05
2. Dissection of Scoliodon / Labeo Afferent and efferent, Cranial Nerves. Brain	03
3. Dissection of Rat/ Frog ; Urinogenital system, Arterial system, Venous System, Brain of Rat.	05
4. Mounting of Placoid, Cycloid and Ctenoid scales of fish	01
5. Study of Embryological development of chick according to hours of incubation.	01
6. Visit to Zoological museum/Zoo Park is compulsory and Submission of report	
7. Write a report on common birds/mammals in your locality, scientific names and economic importance.	

Total Practical periods: - 15

B.Sc. III Semester
Course Code - ZOL- 304
PAPER: X
GENETICS – II (Practical)

1. Preparation of paper model of DNA and study of DNA structure	01
2. Study of protein synthesis with the help of charts/models.	02
3. Estimation of DNA from animal tissue with the help of Diphenyl amine method.	02
4. Study of preparation of Normal Karyotype of human.	01
5. Karyotypic study of Down's syndrome, Turner's syndrome, Klinefelter's syndrome with the help of photograph.	02
6. Detection of Barr body from epithelial cell.	01
7. Problems on sex linked inheritance.	02
8. Problems based on Hardy – Weinberg's law	02
9. Study of gene frequency and mutants of man ; Attached and free ear lobe. Colour of eye. Rolling of tongue. Blood group frequency.	02
Total Practical periods:-	15

Pattern of Question Paper**B.Sc. III Semester****Course Code - ZOL- 301****PAPER: VII****VERTEBRATE ZOOLOGY****Time: 03:00 hours****Max. Marks: 50**

- N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.
-

- | | |
|--|--|
| Q.1. Long answer question.
OR
Long answer question. | Based on chapter 1&2
OR
Based on chapter 1&2 |
| Q.2. Long answer question.
OR
Long answer question. | Based on chapter 3&4
OR
Based on chapter 3&4 |
| Q.3. Long answer question.
OR
Long answer question. | Based on chapter 5&6
OR
Based on chapter 5&6 |
| Q.4. Short Notes on:
a)
b)
OR
Short Notes on:
a)
b) | Based on all chapters

OR
Based on all chapters |
| Q.5. Multiple choice questions:
1)
2)
3)
4)
5)
6)
7)
8)
9)
10) | Based on all chapters |

Pattern of Question Paper**B.Sc. III Semester****Course Code - ZOL- 302****PAPER: VIII****GENETICS – II****Time: 03:00 hours****Max. Marks: 50**

- N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.
-

- | | |
|--|--|
| Q.1. Long answer question.
OR
Long answer question. | Based on chapter 1&2
OR
Based on chapter 1&2 |
| Q.2. Long answer question.
OR
Long answer question. | Based on chapter 3
OR
Based on chapter 3 |
| Q.3. Long answer question.
OR
Long answer question. | Based on chapter 4&5
OR
Based on chapter 4&5 |
| Q.4. Short Notes on:
a)
b)
OR
Short Notes on:
a)
b) | Based on all chapters

OR
Based on all chapters |
| Q.5. Multiple choice questions:
1)
2)
3)
4)
5)
6)
7)
8)
9)
10) | Based on all chapters |

B.Sc. IV Semester**Course Code - ZOL- 401****PAPER: XI****ANIMAL PHYSIOLOGY (Special Emphasis on Mammals)**

1. Digestion :-	07
Brief Introduction to digestive system.	
Buccal digestion - salivary secretion and digestion.	
Gastric digestion - gastric secretion and digestion.	
Intestinal digestion - Pancreatic secretion, bile juices and digestion in Small intestine, digestion and absorption in large intestine.	
2. Respiration :-	09
Respiratory organs.	
Breathing mechanism.	
Respiratory pigments: - Properties and function of respiratory pigments.	
External respiration.	
Internal respiration.	
Transport of gases.	
3. Circulation :-	05
Working of mammalian heart.	
Blood and its composition.	
Mechanism of blood clotting.	
4. Excretion :-	05
Structure of kidney.	
Structure of uriniferous tubules.	
Urine formation: - Ultra filtration selective, re-absorption and tubular secretion.	
Counter current multiplier system.	
5. Nerve Physiology :-	06
Structure of nerve cells and neuron.	
Neurotransmitters.	
Synapses: - Ultra structure and function.	
6. Muscles Physiology :-	05
Ultra structure of smooth muscle, striated muscles, and cardiac muscles.	
Muscle contraction.	
Simple twitch and fatigue	
7. Reproduction :-	08
Structure of gonads, Gametogenesis.	
Role of sex hormones in Reproduction.	
Reproductive cycles – oestrous and menstrual cycle	
Total Periods: -	45

B.Sc. IV Semester**Course Code - ZOL- 402****PAPER: XII****BIOCHEMISTRY AND ENDOCRINOLOGY****A-BIOCHEMISTRY**

- | | |
|--|-----------|
| 1. Enzymes :-
Definition, concept and nomenclature,
Properties, classification,
Mechanism of enzyme action,
Factors affecting enzyme action (Temperature, pH, Substrates & Co-enzyme.) | 05 |
| 2. Carbohydrates :-
Definition Classification, monosaccharide, disaccharides, oligosaccharides and polysaccharides.
Metabolism: - Glucogenesis, Gluconeogenesis, Glycolysis, TCA. & oxidative phosphorylation. | 06 |
| 3. Proteins :-
Definition , classification -simple , conjugated and derived proteins,
Structure of proteins: - Primary, secondary, tertiary and quaternary.
Metabolism: - Deamination and transamination. | 06 |
| 4. Lipids:
Definition, classification, simple, compound and derived lipids.
Metabolism: - β oxidation and cholesterol biosynthesis . | 05 |
| 5. Vitamins: - Sources and deficiency | 02 |

B- ENDOCRINOLOGY

- | | |
|--|-----------|
| 1. Endocrine system of vertebrates: -
Introduction: - Definition of endocrine, Paracrine and Autocrine system.
Significance of endocrine and neuro - endocrine system. | 04 |
| 2. Pituitary gland: - Morphology & histological structure, Hormones and their function. | 05 |
| 3. Thyroid gland: - Morphology & histological structure, Hormones and their function. | 03 |
| 4. Adrenal gland: - Morphology & histological structure, Hormones and their function. | 05 |
| 5. Pancreas: - Islets of Langerhans- Histological structure
Hormones and their function. | 02 |

Total Periods: - 45

RECOMMENDED BOOKS
ANIMAL PHYSIOLOGY

- William S.Hoar- General and Comparative Physiology, prentice hall of India ltd.
 - Wood E.W. Principle of Animal physiology
 - Nagbhushnum R., Sarojini R., Kodarkar M.S. –Animal Physiology
 - Verma ,Agarwal & Tyagi-animal physiology
 - Moeye K.-Animal Physiology, Cambridge low prize edition.
 - Dantzler, W.H. Comparative Physiology (Handbook of Physiology): Vol. 1, 2, (ed.)
Oxford University Press, New York, USA
 - R. Eckert. Animal Physiology: Mechanisms and Adaptation. W.H.
 - Mohan Arora – animal physiology , Himalaya publication
 - A.K. Berry. –animal physiology
-

BIOCHEMISTRY AND ENDOCRINOLOGY

- J.L. Jain –biochemistry S.Chand Publication, meerut
- Lehninger- Biochemistry, Kalyani Publications
- Stryer-Biochemistry, W.H Freeman and Co., New York
- Granner and Rodwell - Harper's Illustrated Biochemistry, Murray, (27th Ed.),
McGraw Hill, New York, USA
- Nelson and Cox - Principles of Biochemistry. Lehninger. 2nd Ed. CBS publishers.
- J H Wet - General Biochemistry Wiley Eastern Ltd.
- Rangnatha Rao K-Text Book of Biochemistry, Prentice-Hall of India
- C.B.Powar- Biochemistry – (Himalaya Pub.)
- Das.-Biochemistry
- E.J.W. Barrington, General and Comparative Endocrinology,
Oxford, Clarendon Press.
- R.H. Williams, Textbook of Endocrinology, W.B. Saunders

B.Sc. IV Semester
Course Code - ZOL- 403
PAPER: XIII
ANIMAL PHYSIOLOGY (PRACTICAL)

1. To study the digestive enzymes from cockroach/Human Saliva.	02
2. Total count of RBC /WBC from given blood sample.	04
3. Preparation of Heamatin crystals from blood sample.	01
4. Hb% from given blood sample.	01
5. Effect of isotonic, hypotonic, and hypertonic solutions on blood cell (RBCs)	01
6. Detection of nitrogenous waste product from the extract of different animals	01
7. Detection of nitrogenous waste product in fish/frog water tank.	01
8. Estimation of O ₂ consumed by fish in relation to temperature by Wrinkle's method.	02
9. Typographic reading of skeletal muscle properties , heart beating in Toad / Rat. (Demo only)	01
10. Histological study of following.	01
T.S. of Kidney	
T.S. of Testis	
T.S. of Ovaries	
T.S. of Pancreas	
T.S. of Intestine	

Total practical periods: - 15

B.Sc. IV Semester
Course Code - ZOL- 404
PAPER: XIV
BIOCHEMISTRY AND ENDOCRINOLOGY (PRACTICAL)

1. Preparation of solutions of given percentage, normality and molarity.	02
2. Study of analytical instrument principle and applications. pH meter, Colorimeter, Centrifuge Electrophoresis	04
3. Factors affecting enzymes activity temperature and pH.	02
4. Detection of amino acid by paper chromatography.	01
5. Qualitative test for organic compound. Carbohydrate. Protein. Fats.	03
6. Quantitative estimation of protein from animal tissue using Lawry's method.	02
7. Study of permanent histological slides of endocrine glands. T.S. of Pituitary gland, T.S. of Thyroid gland, T.S. of Adrenal Gland, T.S. of Islets of langarhance. T.S. of Testis T.S. of Ovaries	02
Total practical periods: -	15

Pattern of Question Paper**B.Sc. IV Semester****Course Code - ZOL- 401****PAPER: XI****ANIMAL PHYSIOLOGY (Special Emphasis on Mammals)****Time: 03:00 hours****Max. Marks: 50**

- N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.
-

- | | |
|--|--|
| Q.1. Long answer question.
OR
Long answer question. | Based on chapter 1 & 2
OR
Based on chapter 1 & 2 |
| Q.2. Long answer question.
OR
Long answer question. | Based on chapter 3, 4 & 5
OR
Based on chapter 3, 4 & 5 |
| Q.3. Long answer question.
OR
Long answer question. | Based on chapter 6 & 7
OR
Based on chapter 6 & 7 |
| Q.4. Short Notes on:
a)
b)
OR
Short Notes on:
a)
b) | Based on all chapters

OR
Based on all chapters |
| Q.5. Multiple choice questions:
1.
2.
3.
4.
5.
6.
7.
8.
9.
10. | Based on all chapters |

Pattern of Question Paper**B.Sc. IV Semester****Course Code - ZOL- 402****PAPER: XII****BIOCHEMISTRY AND ENDOCRINOLOGY****Time: 03:00 hours****Max. Marks: 50**

- N.B. 1) Attempt all questions.
2) All question carry equal marks.
3) Illustrate your answer with suitable labeled diagram.
-

- | | |
|--|--|
| Q.1. Long answer question.
OR
Long answer question. | Based on chapter Sec. A 1 & 2
OR
Based on chapter Sec. A 1 & 2 |
| Q.2. Long answer question.
OR
Long answer question. | Based on chapter Sec. A 3, 4 & 5
OR
Based on chapter Sec. A 3, 4 & 5 |
| Q.3. Long answer question.
OR
Long answer question. | Based on chapter Sec. B 1 to 5
OR
Based on chapter Sec. B 1 to 5 |
| Q.4. Short Notes on:
a)
b)
OR
Short Notes on:
a)
b) | Based on all chapters

OR
Based on all chapters |
| Q.5. Multiple choice questions:
1
2
3
4
5
6
7
8
9
10 | Based on all chapters |

SKELETON OF QUESTION PAPER**B. Sc. III & IV Semester****Course Code - ZOL-303+403****PAPER: IX+XIII****VERTIBRATE ZOOLOGY+ANIMAL PHYSIOLOGY (PRACTICAL)****Time: - 4:00 hrs****Total marks:-100**

Q.1.	Dissect fish.....so as to expose it'ssystem	20
	OR	
	Dissect Frog / Ratso as to expose it'ssystem	
Q.2.	Estimation of O ₂ consumption in relation to temperature.	20
	OR	
	Detection of any two nitrogenous waste products from the given sample	
	OR	
	Total count of RBC/WBC from given blood sample	
Q.3.	Mounting ofscale of fish.	10
	OR	
	Effect of hypotonic/ isotonic/ hypertonic solution on RBC	
	OR	
	Preparation of haematin crystals from given blood sample	
Q.4.	Identification of given spot (Museum study -05. Chick embryo - 02 & histology -03)	30
Q.5.	Record books	10
Q.6.	Submission of slide (At least five)	05
Q.7.	Vivo-voce.	05

SKELETON OF QUESTION PAPER**B.Sc. III & IV Semester****Course Code - ZOL-304+404****PAPER: X + XIV****GENETICS – II + BIOCHEMISTRY AND ENDOCRINOLOGY (PRACTICAL)****Time: - 4:00 hrs****Total marks:-100**

-
- | | |
|---|-----------|
| Q.1. Estimation of total DNA from..... Tissue
OR
Problems on sex linked inheritance/ Hardy –Weinberg's law. | 20 |
| Q.2. Quantitative estimation of Protein from..... Tissue
OR
Detection of organic compound from given samples A&B .Report the test, observation and results.
OR
Preparation of DNA model. | 20 |
| Q.3. Calculates the RF values of given amino acids.
(Using paper chromatography)
OR
Prepare the solutions of given percentage/normality/ molarity
(At least two types)
OR
Detection of Barr body from epithelial cells. | 15 |
| Q.4. Identify the given spots and comment.
(Syndroms-02. Endocrine glands-03) | 30 |
| Q.5. Record book | 10 |
| Q.6. Viva-voce | 05 |

S-25 March, 2013 AC after Circulars from Circular No.153 & onwards

- 17 -

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.

..2..

S-25 March, 2013 AC after Circulars from Circular No.153 & onwards

- 18 -

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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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S*/-080513/-

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



SYLLABUS

of

B.Sc. FIRST & SECOND SEMESTER

[ELECTRONICS (OPTIONAL)]

{Effective from – June- 2013 onwards}

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

B.Sc. Electronics (Optional) Course Structure in Semester System (I to VI SEMESTER) {Effective from June 2013}

B.Sc. First, Second & Third Year

Semester	Course Code	Paper Number	Title of Paper	Credits	Marks
I	ELE-101	Paper-I	Network Theorems & Semiconductor Devices	03	50
	ELE-102	Paper-II	Digital Electronics – I	03	50
	ELE-103	Paper-III	Practicals based on Paper – I & II	1.5	50
II	ELE-201	Paper- IV	Amplifiers	03	50
	ELE-202	Paper-V	Digital Electronics – II	03	50
	ELE-203	Paper-VI	Practicals based on Paper – III & IV	1.5	50

**Note: (i) For Theory Papers, 1 Credit = 15 Periods
For Practical Papers, 1 Credit = 30 Periods**

**(ii) In the examination the students will perform only ONE experiment from papers III and VI, carrying 100 marks. The distribution of 100 marks will be as follows:
Experiment: 80 marks
Project : 20 marks**

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

**B. Sc. First Semester
Paper – I**

**Subject: ELECTRONICS
Course: ELE – 101**

(effective from June 2013)

Paper – I (ELE – 101): Network Theorems and Semiconductor Devices

Marks: 50

Credits:03

Periods : 45

- 1. Components and Network Theorems :** (12) [0.8credits]
Active & passive elements, Resistors, Capacitors, Inductors, Transformers, Relays and Fuses { classification, specification & Applications}, Voltage divider theorem, current divider theorem, ideal Constant voltage source, Ideal constant current source, superposition theorem, Thevenin's theorem, maximum power theorem,
- 2. Diodes :** (09) [0.6credits]
P-N junction Diode, Biasing a semiconductor diode, Static and Dynamic resistance of a diode, breakdown of PN junction, ideal diode, Special diodes (Zener diode, Tunnel diode, Varactor diode, Light Emitting diode and Photodiode)
- 3. Transistors:** (12) [0.8credits]
Transistor, transistor action, transistor symbols, transistor configurations, characteristics of transistor in common base, common emitter, common collector configurations, comparison of CE, CB and CC configuration, transistor current gains α and β , relation between α and β , Junction field effect transistor, Static characteristics of JFET, JFET characteristics with external bias, transfer characteristics, small signal JFET parameters, MOSFET.
- 4. Power supplies:** (12) [0.8credits]
Block diagram of Regulated Power Supply, Half wave rectifier, efficiency of HWR, Full wave rectifier, Bridge rectifier, efficiency of FWR, ripple factor, types of filter circuits, Zener diode as voltage regulator, transistor series voltage regulator, fixed positive linear regulators, fixed negative linear voltage regulators

Text Books:

1. Electrical Technology – B.L.Theraja (S. Chand 2004) (Chp.1)
2. Semiconductor Electronics – A.K.Sharma New age international 1996(Chp.2)
3. Principle of electronics – V.K.Mehta (S. Chand and Co. 2004) (Chp.2,3 and 4)
4. Basic Electronics (solid stste) – B L Theraja (S. Chand and Co. 2012) (Chp.1, 2,3 and 4)
5. Basic Electronics by Grobe

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

**B. Sc. First Semester
Paper – II**

**Subject: ELECTRONICS
Course: ELE – 102**

(effective from June 2013)

Paper – II (ELE – 102): Digital Electronics – I

Marks: 50

Credits:03

Periods : 45

- 1. Number System: (15) [1 credits]**
Number System: Decimal, Binary, Hexadecimal Number Systems and their inter conversions , Binary arithmetic (addition, subtraction, multiplication and division), 1's and 2's compliment method for binary subtraction, Hexadecimal addition and subtraction, Binary Codes (8421 (BCD) code, Gray code, Excess-3 code), BCD addition and subtraction, Excess-3 addition and subtraction, ASCII Code
- 2. Logic gates: (09) [0.6credits]**
Positive and negative logic, Logic Gates (NOT gate, AND gate, OR gate, NAND gate, NOR gate) using diodes & transistors, Ex-OR gate, Ex-NOR gate,
- 3. Boolean algebra: (09) [0.6 credits]**
Boolean Operations, Rules and laws of Boolean algebra, DeMorgan's theorems, minterms, maxterms, SOP and POS form of Boolean expressions, Simplification of Boolean Expressions, Karnaugh map [K-map] (up to four variables only)
- 4. Combinational logic circuits: (12) [0.8 credits]**
NAND and NOR gate as universal building blocks, Half adder, Full adder, Half subtractor, full subtractor, 4 bit parallel adder and subtractor, 2's complement adder /subtractor, 3 bit binary decoder, decimal to BCD encoder, 8 to 1 multiplexer, 1 to 8 demultiplexer

Books Recommended:

1. Digital Fundamentals – Thomas L Floyd, Universal Book Stall New Delhi
2. Digital Electronics and Microcomputers – R.K.Gaur
3. Digital Analog Techniques – Navneth, Kale and Gokhale, Kitab Mahal
4. Digital Electronics with Practical Approach – G N Shinde, Shivani Publications Nanded
5. Digital Principles and Circuits – C B Agarwal, Himalaya Publishing House

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

**B. Sc. Second Semester
Paper – III**

**Subject: ELECTRONICS
Course: ELE – 201**

(effective from June 2013)

Paper – III (ELE – 201): Amplifiers

Marks: 100

Credits:03

Periods : 45

1. Bias for Transistor Amplifiers:

(12) [0.8credits]

Transistor load line analysis, Operating point, Inherent variation of transistor parameters, Stabilisation, essentials of transistor biasing circuit, stability factor, methods of transistor biasing, base resistor method, voltage divider bias method.

2. Small signal Amplifiers:

(12) [0.8credits]

Two port network, h-parameter equivalent circuit, equivalent circuit for BJT, transconductance model, CE amplifier, CB amplifier, emitter follower circuit, equivalent circuit for JFET, Common Source amplifier, source follower amplifier

3. Feedback Amplifier:

(12) [0.8credits]

An amplifier black box with feedback, stabilization of gain by negative feedback, reduction of nonlinear distortion by negative feedback, , effect of feedback on output resistance, effect of feedback on input resistance, voltage series feedback,

4. Multistage transistor amplifier:

(09) [0.6credits]

Multistage transistor amplifier, important terms, RC coupled transistor amplifier, direct coupled amplifier

Text Books :

1. Electronics fundamentals and applications–J.D.Ryder,5th ed. (Chp. 1, 2 and 3)
2. Principle of electronics - V.K.Mehta (S Chand and co. 2004)(Chp.1 and 4)

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

**B.Sc. Second Semester
Paper – VI**

Subject: ELECTRONICS

Course: ELE – 202

(effective from June 2013)

Paper – VI (ELE – 202): Digital Electronics – II

Marks: 100

Credits:03

Periods : 45

- 1. Flip-Flops:** **(9 periods) [0.6 credits]**
flip flops (SR, D, JK and T) [using gates], Methods of triggering flip flops, Edge triggered flip flops (SR, D, JK and T), Asynchronous inputs, Master slave JK flip flop, Operating characteristics
- 2. Counters:** **(9 periods) [0.6 credits]**
Concept of counter, Asynchronous Counters (three and four bit), Synchronous Counters (three and four bit), decade Counter (asynchronous), Up/Down Synchronous Counter (three bit only)
- 3. Shift Registers:** **(9 periods) [0.6 credits]**
Shift register functions, Serial In – Serial Out Shift Register, Serial In – Parallel Out Shift Register, Parallel In – Serial Out Shift Register, Parallel In – Parallel Out Shift Register, Bidirectional Shift Register, Ring Counter, Buffer Register
- 4. Memories:** **(9 periods) [0.6 credits]**
Memory Concept, Read Only Memory (ROM), Programmable ROMs (PROMs & EPROMs), Random Access (Read / Write) Memories (RAMs)
- 5. D/A and A/D converters:** **(9 periods) [0.6 credits]**
R-2R Ladder type D/A converter, DAC Characteristics (Monotonicity, Resolution, Accuracy and Setting Time), Successive approximation A/D converter, Dual slope A/D converter

Books Recommended:

1. Digital Fundamentals – Thomas L Floyd, Universal Book Stall New Delhi
2. Digital Electronics and Microcomputers – R K Gaur
3. Digital Analog Techniques – Navneeth, Kale and Gokhale, Kitab Mahal
6. Digital Electronics with Practical Approach – G N Shinde, Shivani Publications Nanded
7. Digital Principles and Circuits – C B Agarwal, Himalaya Publishing House

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

**B. Sc. First Semester
Paper – V**

**Subject: ELECTRONICS
Course: ELE – 103**

(effective from June 2013)

Paper – V (ELE – 103): Experiments based on paper I & II

Marks: 50

Credits: 1.5

Every candidate appearing for examination must produce journal showing that he/she has completed 06 experiments during academic year. The journal must be certified at the end of the year by Head of the Department.

1. Study of PN junction diode characteristics, determination of ac and dc resistance
2. Study of zener diode characteristics, determination of V_Z , I_Z , Z_Z .
3. Study of transistor characteristics in CE configuration, determination of α .
4. Study of JFET characteristics, determination of parameters.
5. Built and study of Full wave rectifier
6. Built and study shunt regulator using zener diode, line and load regulation
7. Built and study power supply with capacitor filter
8. Built and Built and study NOT, OR, & AND gates using Diodes and Transistor/ 74XX.
9. Built and Built and study NAND & NOR gates using Diodes and Transistor/ 74XX.
10. Built and Built and study basic gates using NAND/ NOR gates.
11. Built and study of Half adder using gates.
12. Built and study of Half subtractor using gates.

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
B. Sc. Second Semester **Subject: ELECTRONICS**
Paper – VI **Course: ELE – 204**
(effective from June 2013)

Paper – VI (ELE – 203): Experiments based on paper II & IV

Marks: 50

Credits: 1.5

Every candidate appearing for examination must produce journal showing that he/she has completed 04 experiments during academic year. The journal must be certified at the end of the year by Head of the Department.

1. Built and study CE amplifier, plot the frequency response curve and find 3 dB bandwidth
2. Built and study common source FET amplifier, plot the frequency response curve and find 3 dB bandwidth
3. Built and study current series feedback amplifier, plot frequency response curve with and without feedback
4. Built and study two stage RC coupled CE amplifier, plot the frequency response curve and find 3 dB bandwidth
5. Built and study JK, T and D- Flip-Flops using IC 7476
6. Built and study 4-bit binary parallel adder / subtractor using IC 7483
7. Built and study MOD 16 Asynchronous binary UP counter
8. Built and study binary decade counter IC 7490
9. Built and study D/A converter using R-2R ladder network

The students should built a mini project and submit it at the time of examination along with project report. The project will carry 20 marks in the examination.

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डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

परिपत्रक क्रमांक/एस.यु./विज्ञान/अभ्य क्रमांक/७४/२०१४

या परिपत्रकाद्वारे सर्व संबंधितांना सुचित करण्यात येते की, विज्ञान विद्याशाखेने शिफारस केल्यानुसार बी. एस्सी. / एम. एस्सी. प्रथम व द्वितीय वर्षाच्या सुधारित अभ्यासक्रमास आणि बी. एस्सी. प्रथम वर्षाच्या अभ्यासक्रमात किरकोळ बदल करण्यास विद्यापरिषदेच्या वतीने मा. कुलगुरु यांनी, त्यांना प्राप्त असलेल्या विशेष अधिकार महाराष्ट्र विद्यापीठ अधिनियम-१९९४ कलम १४(७) अन्वये मान्यता दिलेली आहे. त्या अनुषंगाने सुधारीत तयार केलेल्या अभ्यासक्रमाची प्रत या परिपत्रकासोबत आपल्या पुढील कार्यवाहीसाठी पाठविण्यात येत आहे.

[1]	B.Sc. Physics	Semester-III & IV,
[2]	B.Sc. Chemistry	Semester-III & IV,
[3]	B.Sc. Botany	Semester-III & IV,
[4]	B.Sc. Zoology with minor changes	Semester-I & II,
[5]	B.Sc. Zoology	Semester-III & IV,
[6]	B.Sc. Fisheries	Semester-III & IV,
[7]	B.Sc. Electronics (Opt.)	Semester-III & IV,
[8]	B.A./B.Sc. Mathematics	Semester-III & IV,
[9]	B.Sc. Computer Science	Semester-I & II,
[10]	B.Sc. Information Technology	Semester-I & II,
[11]	B.C.A.	Semester-I & II,
[12]	B.Sc. Computer Science(Opt.)	Semester-I & II,
[13]	B.Sc. Information Technology(Opt.)	Semester-I & II,
[14]	B.Sc. Computer Application(Opt.)	Semester-I & II,
[15]	B.Sc. Computer Maintenance(Opt.)	Semester-I & II,
[16]	B.Sc. Biotechnology (Progressively)	Semester-I to VI,
[17]	B.Sc. Biotechnology (Opt.) (Progressively)	Semester-I to IV,
[18]	B.Sc. Sericulture Technology	Semester-I & II,
[19]	B.Sc. Networking Multimedia	Semester-III & IV,
[20]	B.Sc. Bioinformatics	Semester-I & II,
[21]	B.Sc. Hardware & Networking	Semester-I & II,
[22]	B.Sc. Animation	Semester-I & II,
[23]	B.Sc. Dairy Science & Technology	Semester-III & IV,
[24]	B.Sc. Biochemistry	Semester-III & IV,
[25]	B.Sc. Analytical Chemistry	Semester-III & IV,
[26]	B.Sc. Textile & Int. Decoration with minor changes	Semester-I & II,
[27]	B.Sc. Textile & Int. Decoration	Semester-III & IV,
[28]	B.Sc. Home Science with minor changes	Semester-I & II,
[29]	B.Sc. Home Science	Semester-III & IV,
[30]	B.Sc. Agro.Chem. & Fertilizers	Semester-III & IV,

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[31]	B.Sc. Geology	Semester-III & IV,
[32]	B.A. Statistics with minor changes	Semester-I & II,
[33]	B.A. Statistics	Semester-III & IV,
[34]	B.Sc. Statistics with minor changes	Semester-I & II,
[35]	B.Sc. Statistics	Semester-III & IV,
[36]	B.Sc. Industrial Chemistry	Semester-III & IV,
[37]	B.Sc. Horticultural	Semester-I & II,
[38]	B.Sc. Dry land Agriculture	Semester-I & II,
[39]	B.Sc. Microbiology	Semester-III & IV,
[40]	M.Sc. Computer Science	Semester-I to IV,
[41]	M.Sc. Information Technology	Semester-I to IV.

हा सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाचा आराखडा शैक्षणिक वर्ष २०१४-१५ करिता मर्यादित असेल व विद्यापरिषदेच्या अंतिम मान्यतेनंतर हे परिपत्रक नियमित ठेवण्याबाबत या कार्यालयाद्वारे नवीन परिपत्रक पारीत करण्यात येईल. तसेच सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाची प्रत विद्यापीठाच्या संकेतस्थळावर उपलब्ध आहे.

करिता, या परिपत्रकाची सर्व संबंधितांनी नोंद घ्यावी.

विद्यापीठ प्रांगण,
औरंगाबाद-४३१ ००४.
संदर्भ क्र.एस.यु./सा.शा./सबवि /२०१३-१४/
६५९९-७०२
दिनांक :- २७-०५-२०१४.

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संचालक,
महाविद्यालये व विद्यापीठ
विकास मंडळ.

या परिपत्रकाची एक प्रत :-

- १) मा. परीक्षा नियंत्रक, परीक्षा विभाग,
 - २) मा. प्राचार्य, सर्व संलग्नीत महाविद्यालये,
 - ३) संचालक, युनिक यांना विनंती करण्यात येते की, सदरील अभ्यासक्रम विद्यापीठाच्या संकेतस्थळावर उपलब्ध करुण देण्यात यावेत.
 - ४) संचालक, ई-सुविधा केंद्र, विद्यापीठ परिसर,
 - ५) जनसंपर्क अधिकारी, मुख्य प्रशासकीय इमारत,
 - ६) कक्ष अधिकारी, पात्रता विभाग, मुख्य प्रशासकीय इमारत,
 - ७) कक्ष अधिकारी, बी.ए. / बी.एस्सी./ बी.सी.एस./एम.एस्सी. विभाग, परीक्षा भवन,
 - ८) अभिलेख विभाग, मुख्य प्रशासकीय इमारती मागे,
- डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद.

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

Revised Syllabus of
B.Sc. First Year
Computer Science (Optional)
Semester-I & II

[Effective for June 2014-15]

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Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

Curriculum Structure and Scheme of Evaluation: B.Sc. (Computer Science) (Optional)

Sr. No.	Course Code	Name of the Subject	Scheme of Teaching			Scheme of Evaluation(Marks)			
			T Hrs/ Week	P Hrs/ Week	Total Hrs/ Week	University Theory Exam.	University Practical Exam.	Duration	Total Marks
Semester I									
1	CSO1	Computer Fundamentals	3	-	3	50	-	2	50
2	CSO2	Digital Electronics	3	-	3	50	-	2	50
3	CSO3	Office Suite & Digital Electronics	-	3	3	-	50	3	50
Total of Semester – I			6	3	9	100	50		150
Semester II									
4	CSO4	Operating System I	3		3	50	-	2	50
5	CSO5	Programming in C	3		3	50	-	2	50
6	CSO6	Operating System & Programming in C	-	3	3	-	50	3	50

Total of Semester – II	6	3	9	100	50		150
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Computer Fundamentals

Objective: *To impart basic introduction to computer hardware components, computer numbering, how the CPU works, fundamental about algorithms and flowchart as well as different type of software.*

Sr. No	Topic	Ref.	No. of Lect.
1.	Fundamentals of Computer System		3
	<ul style="list-style-type: none"> • Introduction. • Characteristics & features of Computers. • Components of Computers. • Organization of Computer. 	1/1	
2.	Algorithm and Flowcharts		6
	<ul style="list-style-type: none"> • Algorithm <ul style="list-style-type: none"> ○ Definition ○ Characteristics ○ Advantages and disadvantages ○ Examples • Flowchart <ul style="list-style-type: none"> ○ Definition ○ Define symbols of flowchart ○ Advantages and disadvantages ○ Examples 	2/1	3
		3/3	3
		3/4	
3.	Computer Generation & Classification		3
	<ul style="list-style-type: none"> • Generation of Computers : First to Fifth • Classification of Computers • Distributed & Parallel computers 	2/12	
4.	Computer Languages		3
	<ul style="list-style-type: none"> • Types of Programming Languages <ul style="list-style-type: none"> ○ Machine Languages ○ Assembly Languages ○ High Level Languages 	2/9	

• Assembler, Linker, Loader, Interpreter & Compiler.	2/9	
5. Computer Memory		3
• Memory Cell & Organization	2/4	
• Types of Memory (Primary And Secondary)	2/4	
○ RAM		
○ ROM		
○ PROM		
○ EPROM		
○ Secondary Storage Devices (FD, CD, HD, Pen drive, DVD, Tape Drive, DAT)		
6. I/O Devices		3
• Input Devices :	1/4	
○ Touch screen , OMR, OBR , OCR, Light pen		
• Output Devices :	1/4	
○ Scanners, Digitizers, Plotters, LCD		
○ Plasma Display, Printers		
7. Processor		6
• Structure of Instruction	2/5	
• Description of Processor		
• Processor Features		
• RISC & CISC		
8. Operating system Concepts		6
• Why Operating System	2/10	2
• Functions of Operating System		
• Types of Operating System	2/10	4
○ Batch O.S.		
○ Multiprogramming O.S.		
○ Time Sharing O.S		
○ Personal Computers O.S.		
○ Network O.S.		

Core Reference:

1. Fundamentals of Information Technology

By Chetan Srivastava, Kalyani Publishers

2. Fundamentals of Computers

By V. Rajaraman, PHI Publication, IVth Edition.

3. Fundamentals of Programming

By Raj K. Jain, S. Chand Publication

Additional Reference:

1. Computer Today

By Suresh K. Basandra, Galgotia Publication, Updated Edition

2. Computer Fundamental

By B. Ram, BPB Publication.

Digital Electronics.

Objective: To impart basic knowledge in digital logic and circuits and to introduce basic concepts of data communications. Student will be able to learn basic concepts of digital logic and the design of basic logic circuits using commonly used combinational and sequential circuits

Sr. No	Topic	Ref.	No. of Lect.
1	Number Systems and Arithmetic	1/1	10
	Decimal Number System & Binary Number System		1
	Decimal to Binary conversion(Double-dabble method only)		1
	Binary to Decimal Conversion		1
	Binary Arithmetic : Binary addition, subtraction, multiplication & division		2
	Hexadecimal number system , Hexadecimal to binary, binary to Hexadecimal, Hexadecimal to decimal conversion		2
	Hexadecimal arithmetic: Addition, subtraction, multiplication & division		2
	Binary subtraction using 1' complement, 2's complement method		1
2	Boolean Algebra and Logic Gates	1/3	7
	Postulates of Boolean Algebra		1
	Theorems of Boolean Algebra: Complementation , commutative, AND, OR, Associative, Distributive, Absorption laws , De morgan's theorems		2
	Reducing Boolean expressions		1
	Logic Gates : AND, OR, NOT, Ex-OR, Ex-NOR		1
Syllabus of Computer Science (Optional), w.e.f.: June 2014			10

	NAND as Universal building block		1
	Logic diagrams of Boolean expressions Boolean expressions for logic diagrams		1
3	Minimization Techniques	1/5	5
	Introduction , Minterms and Maxterms		1
	K-Map, K-map for 2 variables		1
	K-map for 3 variables		1
	K-map for 4 variables		2
4	Combinational and Arithmetic Logic Circuits	1/6	7
	Half Adder & Full Adder		1
	Binary parallel Adder		1
	Half Subtractor, Full Subtractor		1
	Adder/Subtractor in 2's complement system		1
	BCD to Decimal decoder		1
	2 : 4 demultiplexer		1
	4 line to 1 line multiplexer		1
5	Flip Flops	1/7	6
	Introduction : RS FF		1
	Clocked RS FF, D FF		1
	Triggering, preset and clear		1
	JK FF , T FF , Race around condition		2
	Master slave FF		1
6	Counters	1/8	7
	Introduction : Asynchronous/ ripple counter		1
	Modulus Counter , MOD-12 counter		1
	Synchronous counter : Synchronous serial & synch parallel counter		2
	BCD counter		1
	Ring counter		1
	Johnson counter		1
7	Shift Registers	1/9	3
	Syllabus of Computer Science (Optional), w.e.f.: June 2014		11

Introduction, Buffer register	1
Serial- in serial –out, Serial-in parallel-out	1
Parallel-in serial-out, parallel-in parallel-out	1

Core Reference:

1. Digital Electronics and Micro-Computers – R. K. Gaur, Dhanpat Rai
Publication

Additional Reference:

1. Digital Electronics and Logic Design – N. G. Palan, Technova
Publication

Office Lab

Objective: To impart the student hands on practice so that students should be able to: *Create, Save, Copy, Delete, Organize various types of files and manage the desk top in general, use a standard word and spread-sheet processing package exploiting popular features.*

- **GUI Operating System:** Mouse Practice, Starting, Login, Shutdown, Exploring Directories, Resizing, Moving, Minimizing, closing of software windows, familiarization with file icons, Launching Applications, Deleting, Renaming files, Managing Directories, Searching for files, Using Accessories.
- **Web Browser:** Basic Browsing, Buttons: forward, backward, home, adding to favorites, stop, save, save as, Saving an Image from the Web, printing, Specifying a Home Page, **Browsing:** Using Web URLs, Anatomy of a URL, Membership Websites: Signing up for email service, **Searching:** Academic Search on the web.
- **Word Processing Tool:** Menus, Shortcut menus, Toolbars, Customizing toolbars, Creating and opening documents, Saving documents, Renaming documents, Working on multiple documents, Close a document ; **Working With Text** :Typing and inserting text, Selecting text, Deleting text, Undo, Formatting toolbar, Format Painter, Formatting Paragraphs: Paragraph attributes, Moving, copying, and pasting text, The clipboard, Columns, Drop caps; **Styles** : Apply a style, Apply a style from the style dialog box, Create a new styles from a model, Create a simple style from the style dialog box, Modify or rename a style, Delete a style; **Lists** : Bulleted and numbered lists, Nested lists, Formatting lists **Tables** :Insert Table button, Draw a table, Inserting rows and columns, Moving and resizing a table, Tables and Borders toolbar, Table properties **Graphics** :Adding clip art, Add an image from a file, Editing a graphic, AutoShapes; **Spelling and Grammar:** AutoCorrect, Spelling and grammar check, Synonyms, Thesaurus; **Page**

Formatting: Page margins, Page size and orientation, Headers and footers, Page numbers, Print preview and printing.

- **Spreadsheet Basics:** Screen elements, Adding and renaming worksheets, The standard toolbar - opening, closing, saving, and more; **Modifying A Worksheet,** Moving through cells, Adding worksheets, rows, and columns, Resizing rows and columns, Selecting cells, Moving and copying cells,, Freeze panes; **Formatting Cells:** Formatting toolbar, Format Cells dialog box, Dates and times; **Formulas and Functions:** Formulas, Linking worksheets, Relative, absolute, and mixed referencing, Basic functions, Function Wizard, Autosum, **Sorting and Filling:** Basic ascending and descending sorts, Complex sorts, Autofill; Alternating text and numbers with Autofill, Autofilling functions; Graphics; Adding clip art; Add an image from a file; Editing a graphics; AutoShapes; **Charts:** Chart Wizard; Resizing a chart; Moving a chart, Chart formatting toolbar; **Page Properties and Printing:** Page breaks, Page orientation, Margins, Headers, footers, and page numbers, Print Preview, Print; Keyboard Shortcuts.

- **Presentation Tool:** AutoContent Wizard, Create a presentation from a template, Create a blank presentation, Open an existing presentation, AutoLayout, Presentation Screen: Screen layout, Views, Working with Slides: Insert a new slide, Applying a design template, Changing slide layouts, Reordering slides, Hide slides, Create a custom slide show, Edit a custom slide show Adding Content: Resizing a text box, Text box properties, Delete a text box, Bulleted lists, Numbered lists, Adding notes, Video and Audio Working with Text: Adding text, Editing options, Formatting text, Replace fonts, Line spacing, Change case Spelling check Color & Background: Color schemes, Backgrounds, Graphics, Adding clip art, Adding an image from a file, Editing a graphic, AutoShapes, WordArt Slide Effects: Action buttons, Slide animation, Animation preview, Slide transitions, Slide show options, Master Slides, Slide master, Header and footer, Slide numbers, Date and time Saving and Printing, Save as a web page, Page setup, Print
- **Integrating Programs** Word, spreadsheet and Presentation.

Note:

The above practical is to be conducted using the either Microsoft-Office or OpenOffice.

Digital Electronics Lab

Objective: *To provide hands-on practice of the basic knowledge in digital logic and circuits and to provide hands-on practice in some commonly used combinational and sequential circuits*

Instruction: The Laboratory work will have to be performed during the semester consisting of any of the 8 experiments from the given list below:

List of Experiments:

1. Study and Testing of measuring instruments: Digital and Analog multimeters, CROs and Signal Generators – measurement of AC & DC voltages, measurement of frequency.
2. Study of Components: Identification and testing of resistors, capacitors, inductors, diodes, LEDs & transistors
3. Study of Logic Gates: Study of truth table of basic gates, realization of Boolean functions
4. Study of Half adder and Full Adder
5. Study of Half Subtractor and Full Subtractor
6. Study of Implementation of a 3:8 decoder,
7. Study of 4-line to 16 bit decoder
8. Study of BCD to 7-segment decoder
9. Study of Generating a Boolean expression with a multiplexer
10. Study of Clocked JK Flip Flop
11. Study of 4-bit ripple counter
12. Study of Parallel-in, serial-out, 4-bit shift register

Operating Systems

Objectives: To introduce students the basic functioning *of operating systems as resource manager and its Salient features. Also to study about process states, scheduling, Memory and I/O Management techniques.*

Sr. No	Topic	Ref	No. of Lect.
I	Introduction to Software:		2
	<ul style="list-style-type: none"> • Software: Definition, classification and components of software, operating system as the main component of system software; 		2
II	Operating System Fundamental	2/1	7
	<ul style="list-style-type: none"> • Operating Systems: OS as a resource manager, Structure of OS, OS functions, Characteristics of modern OS. • Types of O.S.: Early systems, simple batch systems, multi-programmed batch systems, Time sharing system, Personal Computer systems, Parallel systems, Distributed systems, Real time systems • OS Structures: Components of OS: Process management, Memory management, Storage management, File management, I/O management. 		3 2
III	Process Management	1/2	18
	<ul style="list-style-type: none"> • Concept of Process: Process State, Operation on Processes, thread. • CPU Scheduling: Types of Schedulers, Criteria for scheduling, Scheduling Algorithms. • Process Synchronization: Need for synchronization, Critical Section, Hardware Synchronization, Semaphores, Monitors, Problem of synchronization. • Deadlocks: Concept of Deadlock, Deadlock Modeling, Methods 		3 5 5 5

for Handling Deadlock

IV	Storage Management	1/3	12
	• Memory Management: Address Binding, Logical vs. Physical Address space, Memory Allocation, Paging, Segmentation, Segmentation and paging of Intel Pentium.		4
	• Virtual Memory: Demand Paging, Page replacement Algorithms (FIFO, Optimal, LRU), Virtual Memory in windows Xp.		4
	• File System Interface: Files, File Access, Directory Structure, Protection		2
	• Implementation of File System: Allocation Methods, Free space Management		2
V	I/O System	1/4	6
	• I/O System Components : I/O Devices , I/O Hardware , Application I/O interface		3
	• Secondary Storage Structure : Disk fundamental, Disk Scheduling , Disk Management		3

Core References:

1. "Operating System", By S. R. Sathe & Anil S. Mokhade , MacMillan Publication.
2. "Operating System", By Stuart E. Madnick, John J. Donovan.

Additional References:

1. Operating System Concepts- A. Silberzchaz & P.B. Galvin, Addison – Wesley Publishing Company.

Programming in C

Objective: *To expose students to algorithmic thinking and problem solving and impart moderate skills in programming using C Language in a industry-standard. Introduce students to learn basic features, Create, execute simple C programs using conditional statements, loops and arrays.*

Sr. No	Topic	Ref.	No. of Lect.
1.	Introduction <ul style="list-style-type: none"> • An Overview of C , History of C language, • C as a Structured Language, Features of C. 	2/1, 1/1,	3
2.	Basic Elements & Operators <ul style="list-style-type: none"> • Character set, C Token, Identifier & Keywords, Variables • Constant and its types. Integer constant, floating point constant, character constant, string constants. • Operators: Arithmetic, Relational, Logical, Unary operators: Increment & decrement Assignment and Conditional operator. • Precedence & Associativity of Operators 	2/2,3, 1/1	6
3.	Data Types <ul style="list-style-type: none"> • Data Types: <i>int, char, float, double</i>. Declaration & Initialization. • Type modifiers: long, short, signed and unsigned 	2/2, 1/1, 1/6	3
4.	C Program & I/O statements <ul style="list-style-type: none"> • Structure of C Program, Compilation & Execution of C program I/O: Introduction, Formatted Input/Output 	2/4, 2/3, 1/1	3

function: *scanf & printf*, Escape sequence characters.

- Library functions: General used & Mathematical.

5. **Control and Iterative Statements :** 2/5, /6, 1/3, 1/4 12
- Simple if, nested if, if-else, else if ladder
 - Switch-case statement
 - The conditional expression (? : operator)
 - *while* and *do-while* loop, and *for* loop
 - *break & continue* statement, *goto* statement
6. **Arrays:** 2/7, 2/8, 1/8, 3 9
- Introduction, Declaration and initialization
Accessing array elements, Memory representation of array.
 - One dimension and multidimensional arrays, character array, Introduction to string
7. **Functions** 2/9, 1/5, 3 6
- Introduction, types of functions. Defining functions, Arguments, Function prototype, actual parameters and formal parameters, Calling function, Returning function results, Call by value, Recursion.

Core Reference:

1. Let us C : Y. P. Kanetkar [BPB publication]
2. Programming in C : E. Balaburuswamy [Tata McGraw hill]
3. Programming in C : Goterfried [Shaums' Series]

Additional References:

1. Spirit of "C" : Moolish Kooper.

Operating System

Assignments: Write the Program using C (if applicable):

Operating System:

1. Study of DOS Commands.
2. Study of Unix/Linux Commands.
3. Write a program to implement the FCFS Scheduling Algorithm.
4. Write a program to implement the SJF Scheduling Algorithm.
5. Write a program to implement the Priority Scheduling Algorithm.
6. Write a program to implement the Round Robin Scheduling Algorithm.

Lab for Programming in 'C'

List of Experiments:

1. Find Area, Perimeter of Triangle & Rectangle.
2. Find maximum amongst 3 numbers.
3. Program for nested loops.
4. Program to Calculate x^y
5. Program to check Prime Number.
6. Program to find Armstrong Number.
7. Program to print the Fibonacci Series
8. Searching and element from array.
9. Transpose of matrices
10. Multiplication of matrices
11. Sorting array using bubble sort technique
12. Program for recursion e.g. factorial, reverse of digit
13. Program for structure initialization
14. Array of Structure e.g. student result, Employee pay slip , Phone bill
15. Function with parameter & return values

PATTERN OF QUESTION PAPERS

Note : 1) All questions carry equal marks.

2) All questions are compulsory.

Q. No.	Format	Marks
1.	Multiple Choice/Fill in the blank/Match the pair/ one line answer. 1) 2) . . 10)	1 x 10 = 10
2.	a) b) OR a)	5 * 2 =10 10
3.	a) b) OR a)	5 * 2 =10 10
4.	a) b) OR a)	5 * 2 =10 10
5.	Write Short Notes On: (Any Two) a) b) c)	5 * 2 =10
	Total	50

* Not More than 3 bits should be asked in each question of 10 Marks.

(Only for Paper Setter)

S-25 March, 2013 AC after Circulars from Circular No.153 & onwards

- 17 -

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.

..2..

S-25 March, 2013 AC after Circulars from Circular No.153 & onwards

- 18 -

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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.

-***-

S*/080513/-

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



Revised Syllabus of

B.SC. IST YEAR

GEOLOGY

SEMESTER-I & II

[Effective from 2013-14 & onwards]

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

Course Structure

YEAR	SEMESTER	PAPER NUMBER	PAPER TITLE	Hours	MARKS
First	I	Paper – I	Mineralogy and Crystallography	45	50
		Paper - II	General Geology & Structural Geology	45	50
		Paper - III	Practical	22	50
	II	Paper – IV	Petrology	45	50
		Paper – V	Paleontology	45	50
		Paper – VI	Practical	22	50
				224	300

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad**Semester-I**
Paper I: Mineralogy and Crystallography

Sr. No.	Syllabus	Total Periods	Marks
1.	Introduction: Definition, braches and Scope of mineralogy, Importance and conservation of minerals.		
2.	Formation of minerals: Introduction and description of geological processes of mineral formation a) Crystallizations from melt b) Crystallization from Solution (Evaporation and precipitation) c) Crystallization from Vapour (Sublimation) d) Metamorphic processes and metamorphic minerals	(5)	10
3.	Crystal Chemistry a) Bonding forces in crystals: Ionic, Covalent, Vander Waal's and metallic bonds, crystals with more than one type of bond. b) Major element constituents of minerals c) Geochemical affinity & classification of element d) Geometrical and electrical stability of minerals concept of relative size of ions, radius, rations, co-ordination number & ionic substitution. e) Isomorphism, polymorphism, pseudo orphism. f) Silicate structures.	(12)	10
4.	Physical properties of minerals a) Colour, streak, luster, cleavage, fracture, hardness, form, magnetism, electrical property, radio activity, specific gravity & luminescence (phosphorescence and Fluorescence) b) Methods of determining specific gravity-Chemical balance, Walker's steelyard, Jolly's spring balance, psycho meter, heavy liquids.	(7)	10

5.	<p>Crystallography</p> <p>a) Definition and conditions conducive for the formation of crystals, crystal habits and aggregates.</p> <p>b) Crystal morphology-faces, forms, edges, solid angles, interracial angle and its measurement by contact Goniometer, law of constancy of interracial angle.</p> <p>c) Symmetry of crystals-Plane, axis and centre of symmetry, crystallographic and geometric symmetry. Crystallographic axes, lettering and order of crystallographic axes, parameters, axial ratio, indices, parameter system of</p> <p>d) Classification of crystals based on their elements of symmetry and crystallographic axes. The study of following crystal systems:</p> <p>i) Orthorhombic (Type: Baryttes)</p> <p>ii) Tetragonal (Type: Zircon)</p> <p>iii) Cubic (Type: Galena)</p> <p>iv) Hexagonal (Type: Beryl)</p> <p>v) Monoclinic (Type: Gypsum)</p> <p>vi) Triclinic (Type: Axinite)</p> <p>Comparative studies of all the six crystallographic systems</p>	19	20
	Total Number of Lectures	(45)	50

Semester-I, Paper II: General Geology & Structural Geology

Sr. No.	Syllabus	Total	Marks
1.	Introduction: Definition, of geology, Its divisions, sub-divisions and scope	1	
2.	Planet Earth: Position of Earth in universe & Solar system. a) Earth: Its origin size, shape and density. Temperature, pressure and magnetism within the earth. b) Age of the Earth: A brief account of the historical methods. Determination of age by the K/Ar and U/Th methods	(1) (4)	5
3.	a) The Earth's Atmosphere, Hydrosphere, Lithosphere and Biosphere. b) Earth's crust, mantle and core	(2)	03
4.	Continental Drift: Concept and evidence, plate Tectonics a Broad out line	(3)	
5.	Weathering (Mechanical and chemical); erosion, denudation, soil formation and soil profile.	(2)	
6.	The dynamics of erosional and depositional landforms resulting from the action of rivers, wind, and glaciers	(11)	15
7.	Concept of Isostasy: Pratt's and Airy's model	(2)	02
8.	Types of Mountains: Fold, fault block volcanic and residual mountains	(2)	
9.	Volcanoes: Genesis of volcanoes, Central and fissure type of eruptions. Products of volcanic, activity volcanic belts on the earth.	(3)	
10.	Earthquakes: Definition, terminology, causes, intensity and magnitude. Recording of earthquakes. Use of seismic waves in internal structure. Seismic Zones. History and susceptibility of the Indian subcontinent to earthquakes.	(4)	05
11.	Structural Geology: a) Definition, scope, study of outcrop, identification of bedding. Attitude of beds contour map and its interpretation b) Broad outline of fold, fault and unconformity. Study of different types of joints.	(10)	20
Total Number of Lectures		(45)	50

Semester-I, Practical Paper-III
[based on Paper-I & II]

Sr. No.	Syllabus	Total	Marks
1.	<p>Mineralogy</p> <p>a) Physical properties of minerals colour, form, streak, luster, cleavage, fracture, hardness and specific gravity.</p> <p>b) Megascopic Identification of following mineral (with the help of physical properties) Quartz, Rock Crystal, Rose Quartz, Milky, Quartz, Smoky quartz, Amethyst, Chalcedony, Agate, jasper, Flint, Opal, Orthoclase, Plagioclase, Biotite, Muscovite, Garnet, Olivine, Hornblende, Apophyllite, Stilbite, Kyanite, Talc, Calcite, Fluorite, Gypsum, Barytes, Magnetite, Haematite, Chromites, Chalcopyrite, Galena, Pyrolusite, Bauxite, Graphite.</p>	11	25
2.	<p>Experiment:</p> <p>To find out the specific gravity of minerals using Walker's Steel Yard</p>		
3.	<p>Crystallography:</p> <p>Study of elements of symmetry, crystallographic axes and forms with Miller indices in the crystal models belonging to the following crystal systems (Minimum 3 models of each system)</p> <p>a. Orthorhombic System (Type: Baryte)</p> <p>b. Tetragonal System (Type: Zircon)</p> <p>c. Cubic system (Type: Galena).</p> <p>d. hexagonal system (Type: Beryl)</p> <p>e. Monoclinic System (Gypsum)</p> <p>f. Triclinic System (Type: Axinite)</p>	11	25
1.	<p>Toposheets:</p> <p>Reading of top sheets with reference to Topo sheet number, Latitude and Longitude, State / District, Scale Adjacent Topo sheet numbers and conventional Signs.</p>		
2.	Introduction to topographic and geological maps.		
3.	Study of geomorphological models		
	Total Number of Lectures	22	50

Semester-II, Paper-IV : Petrology

Sr. No.	Syllabus	Total	Marks
	PETROLOGY		
1.	Definition and major divisions: a) Definitions of petrology, lithology, petrography, petrogenesis b) Major divisions and diagnostic characteristics of rocks: igneous, sedimentary and metamorphic c) Rock cycle.	03	10
2.	Magma: a) Magma and its composition b) Pyrogenetic minerals c) Formation of crystals and glass	04	
3.	Forms of Igneous bodies: a. Intrusive: Concordant and discordant intrusions i. Concordant: Sills, laccoliths, lopoliths, phaccoliths, concordant batholiths ii. Discordant: dykes and veins, cone sheets, ring dykes, stockwork conolith and discordant batholith. b. Extrusive: lava flows, pahoehoe' and 'aa' lava.	04	
4.	Textures and Structures of Igneous rocks a. Textures, Definition and factors controlling textures: Equigranular (granitic), Inequigranular (porphyritic), glassy. b. Structures: Vesicular, amygdaloidal, blocky, pillow, flow and columnar joints. c. Distinction between textures and structures.	04	
5.	Classification of Igneous Rocks a. Basis of classification : Chemical, mineralogical, mode of occurrence, silica percentage and type of feldspar. Tabular classification. b. Description of the following igneous rocks: 1. Plutonic: Granite, Syentite, Diorite, Gabbro, Dunite. 2. Hypabyssal: Pegmatite, Pitchstone, Dolerite. 3. Volcanic: Rhyolite, Pumice, Basalt, Trochyte, Andesite	04	

	SEDIMENTARY PETROLOGY		
6.	Products of weathering Sediments, sedimentation, and formation of sedimentary rocks: denudation, transportation, deposition and lithification	05	20
7.	Textures and structures of sedimentary rocks a. Clastic and non-clastic textures b. Structures: Lamination, bedding (concordant and discordant), graded bedding and ripple marks.	03	
8.	Description and classification of the following secondary rocks: Late rite and Bauxite, Breccia, Conglomerate, Sandstones, shales, Mudstone, Limestones, coral limestone.	02	
	METAMORPHIC PETROLOGY		
9.	Definition of metamorphism, agents of metamorphis, kinds of metamorphism.	02	15
10.	Structure of metamorphic rocks: maculose, slaty cleavage, Schistose, Granulose, Gneissose.	04	
11.	Classification of metamorphic rocks (based on the original rock, agent / type of metamorphis) and description of following rocks.	10	
	Total Number of Lectures	45	50

Semester-II, Paper-V : Paleontology

Sr. No.	Syllabus	Total	Marks
1.	a. Palaeontology: Definition, branches, importance and scope	02	10
2.	Fossils: Definition, conditions and modes of preservation, uses of fossils Index fossils	06	
3.	Systematic position, morphology of hard parts, geological and geographical distribution of the following: <ol style="list-style-type: none"> a. Phylum Mollusca: <ol style="list-style-type: none"> I. Class: Lamellibranchia or Bivalvia: Morphology of hard parts of the shell and ornamentation and type of hinge lines and detitions. II. Class: Gastropoda: Morphology of hard parts of the shell and forms of the gastropod shell III. Class Cephalopoda: Morphology of hard parts of Nautiloids, Ammonoids, Belemnites and type of suture lines. b. Phylum Brachiopoda: Morphology of hard parts of class articulate and inarticulate. Types of brachial skeleton c. Phylum Echinodermata: Class Echinodea, morphology of hard parts of regularia and irregularia. Variation in the apical disc in echinoids. d. Phylum Arthropoda: Class Trilobita-Morphology of hard parts of trilobites, types of facial sutures, conditions of phgidium. e. Phylum coelenterate: Class anthozoa madreporaria, polyp, medusa, types of septa 	03 03 03 03 03	15
4.	Statigraphy <ol style="list-style-type: none"> a. Principles of statigraphy b. Physiographical division of India c. Std. Geological timeslak d. Indian statigraphical timescale e. Statigraphy code & Nomenclature 	2 4 4 4 8	25
Total Number of Lectures		45	50

Semester-II

Practical Paper-VI [based on Paper-IV & V]

Sr. No.	Syllabus	Total	Marks
1.	Petrology Megascopic study of the following rocks <ol style="list-style-type: none"> a. Igneous: Granite, gabbro, rhyolite, basalt (its varieties Classification based on colour index, mineral composition and texture) b. Secondary: Laterite, bauxite, breccia, conglomerate, sandstones, shales, mudstone and limestones. c. Metamorphic: Slate, marble, quartzite, mica schist and hornblende schist, mica gness and hornblende gneiss. 	08	20
2.	Patacontology Study of at least two specimens from each phylum/class (Total number of specimens should not be less than 15) <ol style="list-style-type: none"> a. Phylum Mollusca-Class Lamellibranchia, Class Gastropoda, Class Cephalopoda. b. Phylum Brachiopoda c. Phylum Echinodermata d. Phylum Arthropoda e. Phylum coelenterate 	07	15
3.	Depiction of important stratigraphic units in the map of India Geological Fieldwork to be conducted in an area of geological interest for at least two days and geological report to be submitted for the same.	07	15
Total		22	50

Reference Books:

1. Rutleys's Elements of Mineralogy: H.H. Read.
2. Text Books of Mineralogy: Dona and Ford
3. Rock Forming Minerals: Deer, Howie, Zussman
4. Manual of Mineralogy: Cornelius, S. Hurlbut and cornel Klein
5. Principals of Mineralogy: W.H. Blackburn, W.H. Denman
6. Mineralogy: Berry Mason, Dietrich
7. Principles of Petrology: Tyrrel
8. Invertebrate Plaeontology: Henry Woods
9. General Geology: Radhakrishan
10. Holmes' Principles of Physical Geology: Edited by P. Mcl. D. Duff.

FACULTY OF SCIENCE

B.Sc. (First Semester) Examination

GEOLOGY

Paper-I

(Mineralogy and crystallography)

Time-2 Hours

Maximum Marks-50

“Please check whether you have to the right question Paper”.

- N.B. :-
- (i) Question no. 1 is Compulsory.
 - (ii) Solve any two questions from 2,3 & 4 and two questions from 5,6 & 7.
 - (iii) Use only blue or black pen.
 - (iv) All questions carry equal marks.

1.	Multiple choice question (All Syllabus)	10
2.	Descriptive (Mineralogy)	10
3.	Descriptive (Mineralogy)	10
4.	Short Notes (Mineralogy)	10
5.	Descriptive (Crystallography)	10
6.	Descriptive (Crystallography)	10
7.	Short Notes (Crystallography)	10

FACULTY OF SCIENCE

B.Sc. (First Semester) Examination

GEOLOGY

Paper-II

(General Geology and Structural Geology)

Time-2 Hours

Maximum Marks-50

“Please check whether you have to the right question Paper”.

- N.B. :-
- (i) Question no. 1 is Compulsory.
 - (ii) Solve any two questions from 2,3 & 4 and two questions from 5,6 & 7.
 - (iii) Use only blue or black pen.
 - (iv) All questions carry equal marks.

1.	Multiple choice question (All Syllabus)	10
2.	Descriptive (General Geology)	10
3.	Descriptive (General Geology)	10
4.	Short Notes (General Geology)	10
5.	Descriptive (Structural Geology)	10
6.	Descriptive (Structural Geology)	10
7.	Short Notes (Structural Geology)	10

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S-25 March, 2013 AC after Circulars from Circular No.153 & onwards

- 17 -

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.

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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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[Signature]
Director,
Board of College and
University Development.

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S-25 March, 2013 AC after Circulars from Circular No.153 & onwards

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- 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

MICROBIOLOGY

SEMESTER-I & II

[Effective from 2013-14 & onwards]

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

Course Structure

YEAR	SEMESTER	PAPER NUMBER	PAPER TITLE	Hours	MARKS
First	I	Paper – I	Fundamentals of Microbiology	45	50
		Paper - II	Microbiological Techniques & General Microbiology	45	50
		Paper - III	Practical [based on Paper- I & II]	45	50
	II	Paper – IV	Cytology and general Microbiology	45	50
		Paper – V	Basic Biochemistry	45	50
		Paper – VI	[based on Paper No.IV & V] Practical	45	50
				270	300

B.Sc. First Year Semester – I
Paper I .Fundamentals of Microbiology

Unit - 1

1 Scope & relevance of Microbiology

- i) Definition & concepts
- ii) Types of microorganism
- iii) Distribution of microorganisms in nature

2. Development of Microbiology as a Scientific Discipline

- i) Early observation of microorganisms
- ii) Spontaneous generation conflict : Contribution of scientists
- iii) Recognition of the microbial role in diseases. Koch's postulates
- iv) Recognition of microbial role in fermentations.
- v) Discovery of microbial effects on organic and inorganic matter.
- vi) Pure culture concept.
- vii) Aseptic surgery

Unit – 2 General characteristics of microorganisms.

2.1 General principles (Bacteria)

- i) Taxonomic rank
- ii) Classification system
- iii) Numerical taxonomy
- iv) Major characteristics used in taxonomy. Morphological, Physiological, Immunological, Metabolic, Etiological. Compositions of proteins, composition of nucleic acids, hybridization, nucleic acid sequencing, identification of organisms based on 16srRNA sequencing, 16S rDNA sequencing
- v) Bergey's manual of systematic Bacteriology, General characteristics enlisting all parts with major characters & examples. (Vol I to IV)

Unit – 3 General characteristics of Microorganisms

- 3.1 Structure, Reproduction (Lytic & Lysogenic cycle)classification of Viruses.(LHT system)**
- 3.1 General characters of Fungi (including yeasts)**
- 3.2 General characters of Actinomycetes**
- 3.3 General characters of Algae**
- 3.4 General characteristics of Mycoplasma and Rickettsia.**
- 3.5 General characteristics of Archaeobacteria**

Unit – 4**4.1 Microscopy**

- i) Definitions : Magnification, resolving power, depth of focus, focal length, numerical aperture.
- ii) Objectives Low , high & oil immersion.
- iii) Oculars : function, Huygenian, Ramsden, Hyperplane & compensating.
- iv) Condensers ; Abbe, variable focus cordiod, parabolic & their functions.
- v) Iris diaphragm.

4.2 Principles, construction using ray diagram, application and comparative study of :

- i) Compound Microscope
- ii) Electron Microscope – SEM, TEM

4.3 Principles, ray diagram & applications.

- i) Phase contrast microscope.
- ii) Dark field microscope.
- iii) Fluorescent microscope.
- iv) Advanced applications of microscopes.

Semester – I Paper II

Microbiological Techniques & General Microbiology

Unit – 1 Stains and dyes.

- i) Definition : stain, dye, chromogen, chromophore, auxochrome, acidic and basic stains, simple and differential staining. (Gram's and Acid fast staining) , natural stains, mordant, decolourizer, counter stains.
- ii) Physicochemical basis of staining.
- iii) Fixatives and fixation of smears.
- iv) Staining of Fungi.
- v) Principle, application and methodology of Negative, Monochrome and Grams Staining

Unit – 2 Cultivation of microorganisms.

- i) Properties of a good culture medium.
- ii) Definition, concept, use and types of different culture media . Synthetic, non synthetic, natural, selective, differential, enriched , enrichment, assay, minimal, maintenance, and transport media.
- iv) Role of Buffers in culture media.
- v) Media used for cultivation of bacteria , fungi, actinomycetes, yeasts, algae and photosynthetic bacteria. (at least two)

Cultivation of anaerobes

- i) Principle and examples.
- ii) Methods (at least 2)

Unit – 3 Microbiological Techniques

1. Pure culture techniques

- i) Development of pure culture
- ii) Aseptic techniques, streak, pour and spread plate methods, single cell isolation.
- iii) Significance

2. Sterilization techniques

- i) Pattern of Microbial death – concepts.
- ii) Sterilization by physical methods
 - High temperature, canning and pasteurization.
 - Low temperature.
 - Non ionizing and ionizing radiations.
 - Bacteriological filters.
- iii) Disinfection by chemical means;
Disinfectants and antiseptics:
Effectiveness, mode of action & application.
Phenolics, alcohols, halogens, heavy metals, quaternary ammonium compounds, aldehydes.
- iv) Sterilization using gases
sulfur dioxide, ethylene oxide, Beta propiolactone.

Unit – 4 Structural Organization of microorganisms.

A] Fundamental categories of microorganisms.

- i) Prokaryotic & Eucaryotic cell concepts and differential account

B] Role of microorganisms:

- 1.1 In agriculture : As biofertilizers, bioinsecticides, in soil improvement (texture , water holding capacity) as geochemical agents, microbe plant interactions (phyllosphere, rhizosphere, mycorrhizal and nodule formation). Plant diseases : list of common plant diseases with their causative agents.
- 1.2 In human and animal health : list of common bacterial, rickettsial , fungal and viral diseases.(with causative agents) in human beings, role of normal flora of human body, antibiotics, vaccines and antisera.
- 1.3 In industries : list of microbial products (and producers) produced on industrial scale, role of contaminants.
- 1.4 In food processing : list of common fermented food & milk products with their representative organisms. Food spoilage, list of organisms causing changes in texture, colour, aroma, taste & nutritional value of the food products. List of food poisoning & food infection causing microorganisms.

B.Sc. First Year Semester I

Paper III .Practical [based on Paper- I & II]

- 1) Microscopy :
 - i) Different parts of a compound microscope.
 - ii) Use and care of compound microscope .
 - iii) Visit to see an electron microscope .
- 2) Construction , operation and utility of laboratory equipments
 - i) Autoclave
 - ii) Hot air oven
 - iii) Incubator
 - iv) pH meter
 - v) High speed centrifuge
 - vi) Colorimeter/ spectrophotometer
 - vii) Anaerobic jar
 - viii) Bacterial Filters
 - ix) Laminar air flow.
- 3) Demonstration of presence of bacteria from – soil/ water/ air/ milk
- 4) Demonstration of yeast, fungi, actinomycetes, algae, protozoa

- 5) Microscopic examination of bacteria:
 - i) Monochrome staining
 - ii) Negative Staining
 - iii) Gram's Staining
- 6) Hanging drop technique to demonstrate bacterial motility
- 7) Micrometry
- 8) Qualitative tests for:
 - i) Carbohydrates – Benedict's test.
 - ii) Protein – Biuret test.
 - iii) Nucleic acid – Diphenylamine(DNA) and orcinol (RNA)tests

**B.Sc. First Year
Semester II**

Paper-IV Cytology and general Microbiology

- Unit – 1 :**
1. **Bacterial morphology and ultra structure.**
 - 1.1 Cytology of a typical bacterial cell.
 - i) Morphology – size and arrangement of bacterial cells.
 - ii) Structure ,chemical compositions and functions of :
 1. Capsule and slime layer
 2. Cell wall : Gram positive and Gram negative bacteria
 3. Unit membrane
 4. Flagella : Arrangement, mechanism of flagellar movement, Chemotaxis, phototaxis, Magnetotaxis.
 5. Pili
 6. Ribosomes.
 7. Nuclear material, Mesosome
 8. Reserved food material: Poly beta hydroxy butyric acid granules, glycogen and polyphosphate granules.
 - 1.2 Bacterial cell division
 - i) Binary fission
- Unit – 2**
- Nutritional Requirements**
- i) Concept.
 - ii) Common nutritional requirements – Energy sources, C, N, P, O,S, micronutrients, growth factors, water etc.
 - iii) Classification on the basis of carbon and energy
- Bacterial growth**
- i) Concept of Growth
 - ii) Definition
 - iii) Bacterial growth curve
 - iv) Phases of growth
 - v) Mathematics of growth
 - vi) Diauxy
 - vii) Factors influencing bacterial growth (temp, pH, oxygen and nutrients).
 - viii) Synchronous growth
 - ix) Continuous culture
 - x) Measurement of bacterial growth

Unit – 3 Microbial Physiology

1. Endospore – types, sporulating bacteria ,architecture of endospore, sporulation process , germination process.

2. Uptake of nutrients

- i) Passive diffusion
- ii) Facilitated diffusion
- iii) Active transport mechanism.
- iv) Group translocation
- vi) Uptake of amino acids and metals

3. Anaerobic respiration :

NO₃ , SO₄ and CO₂ as electron acceptors.

4. Bacterial photosynthesis :

- i) Photosynthetic bacteria,
- ii) Photopigments and associated carriers,
- iii) Photosynthetic apparatus and its mechanism
- iv) Cyclic and non cyclic photophosphorylation ,
- v) Calvin cycle, and reductive carboxylic acid cycle for CO₂ fixation.
- vi) Differences between bacterial and plant photosynthesis.

Unit – 4 Advances in Microbiology

- a) Genetic engineering.
- b) Bioinformatics
- c) Nano biotechnology
- d) Bioaugmentation
- e) Biostatistics
- f) Enzymes and cell immobilization

Semester II**Paper-V Basic Biochemistry****Unit – 1 Carbohydrates**

- i) Definition and classification.
- ii) Properties –optical and chemical.
- iii) Structure of glucose: ring structure, Haworth & fisher's projection, pyranoses , furanoses, isomers, mutarotation.
- iv) Triose, pentose, hexose, heptoses - examples & structures.
- v) Derived monosaccharides: glycosides, furano acids, sugar phosphates, uronic acids, sugar alcohol.
- vi) Disaccharides , glycoside linkage, lactose, maltose, sucrose.
- vii) Oligosaccharides – Trisaccharides, structure of raffinose.
- viii) Polysaccharides – Homo and heteropoly saccharides ,structures starch, cellulose, mucopolysacchrides.
- ix) Biological significance

Unit – 2**Lipids**

- i) Classification simple compounds.
- ii) Chemistry of fatty acids, unsaturated and saturated fatty acids, triglycerides, saponification alkyl ether phospho glycerides , sterols, cholesterol , protaglandins, glycol lipids.
- iii) Function of lipids.

Unit – 3**Proteins**

- i) Classification based on properties of solubility & heat. coagulability. Fibrous, globular proteins and functions.
- ii) Protein structures ; conformation & configuration ,primary structure determination, secondary structure π - helix & β - pleated sheet, tertiary & quaternary structure.
- iii) Classification of amino acids : based on acid – base properties.
- iv) Properties of amino acids – solubility, ampholyte, Zwitterions isoelectric pH .
- v) Peptide bonds – Concepts of biological peptide bond formation, types.
- vi) Enzymes – Concepts, definition, nature , active site, properties, physico-chemical factors contributing to catalytic efficiency of enzymes

Unit – 4

Nucleic acids

- i) Structure of nitrogen bases & base pairing.
 - ii) Structure of nucleosides & nucleotides, ribose, deoxyribose sugars.
 - iii) DNA : properties, forms , structure, function as genetic material.
Types of DNA
 - iv) RNA : Structure, function, types (r-RNA, m-RNA, t-RNA)
 - v) Comparative account of DNA & RNA.
- pH & buffers.** pH titration curve, P_K value.

B.Sc. First Year Semester II
Paper-VI Practical

[based on Paper No.IV & V]

1) Structural staining –

- ◆ Bacterial flagella by Patel, Kulkarni and Gaikwad method
- ◆ Capsule staining – Maneval’s method.
- ◆ Cell-Wall staining- Chance’s method.
- ◆ Spore staining – Schaefer & Fulton’s method.
- ◆ Lipid (PHB) granule staining- Burdon’s method.
- ◆ Metachromatic granule staining- Albert and Neusser’s method.
- ◆ Preparation of culture media.
 - i) Nutrient broth and agar
 - ii) MacConkeys broth and agar..
 - iii) Sugar media
 - iv) Potato dextrose agar
 - v) Blood agar
 - vi) Photosynthetic bacterial growth medium

2) Sterility checks for Autoclaving

3) Isolation of microorganisms from :

- i) Air
- ii) Water
- iii) Soil
- iv) Milk

4) Isolation of bacteria from mixed cultures (streak plate method)

5) Cultivation of Anaerobes

6) Effect of physical and chemical agents on growth of bacteria.

- i) pH
- ii) Temperature.
- iii) Heavy metal ions (oligodynamic action)
- iv) UV rays.
- v) Antibiotics.

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- 17 -

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,
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[15]	B.A. / B.Sc. [Mathematics]	Semester- I & II.

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Date:- 08-05-2013.

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



Revised Syllabus of

B.SC. IST YEAR

INDUSTRIAL CHEMISTRY

SEMESTER-I & II

[Effective from 2013-14 & onwards]

Dr. Babasaheb Ambedkar Marathwada University,
Aurangabad.

Revised Syllabus of B.Sc. I Year Industrial Chemistry
(Effective from the Academic Year 2013-2014)
June 2013 & onward.

B.Sc. I Year Industrial Chemistry

(Three Year Degree Course)

Year	Paper	Course Name	Hours	Marks
B.Sc. I Year Semester-I	I	Theory: Fluid Mechanics & Unit Operations-I	45	50
	II	Theory: Material Balance & Process Calculations (Stoichiometry)	45	50
	III	Practical	45	50
B.Sc. I Year Semester-II	IV	Theory: Aspects of Industrial Chemistry and Heat transfer	45	50
	V	Theory: Energy Balances & Process Calculations	45	50
	VI	Practical	45	50

B.Sc. I Year Industrial Chemistry

Semester I – Paper I

Paper – I: Fluid Mechanics & Unit Operations-I

45 hours

Marks : 50

1. Flow of Fluids:

Definitions of fluids, Classification of fluids, Properties of fluids, Fluid Pressure, Pressure Head, Hydrostatic equilibrium for compressible and incompressible fluids. (08)

1.1 Application of fluid statics :

Mamometers, U-tube manometer, Inclined Manometer, Differential Manometer, Continuous gravity decanter. (07)

1.2 Fluid Flow Phenomena:

Types of flow, Laminar flow, Shear Rate and Shear Stress, Turbulence-Reynolds Number & Transition from laminar to turbulent flow, Reynolds experiments Boundary layers, Flow in boundary layers, Laminar and Turbulent flow in bondary layers. (10)

2. Basic Equations of fluid flow:

Equation of Continuty, Bernoulli's equation, Pump work in Bernoulli's equation and its application. (05)

3. Transportation and Metering of fluids:

Transportation of fluids: Pipe, Tubing, Fittings & valves. Pumps: Classification of Pump, Developed head, Power requirement, Suction lift and cavitations, Positive-displacement pumps, Reciprocating pumps, Rotary pumps, Centrifugal pumps, Centrifugal pump theory, Ideal pump, Actual pump performance, Power consumption, Efficiency, Air Binding and Pump Priming, Losses in Centrifugal Pump, Centrifugal Pump troubles & Remedies, Pump fails to start pumping, Pump is working but not up to the capacity and pressure, Pump starts and then stop pumping Pump takes too much power. (15)

Metering of fluids: Full bore meters – Principle, Construction and Working , Advantages and Disadvantages of Venturimeter, Orificemeter, Pilot Tube, Rotameter.

Semester I - Paper II

Paper – II Material Balance & Process Calculations (Stoichiometry)

45 hours

Marks : 50

1. Units and Dimensions:

Introduction, Dimensions & Systems of Units, Fundamental quantities, Derived Quantities, Conversions & Problems.

2. Basic Chemical Calculations:

Introduction, Mole Atomic Mass & Equivalent Mass, Solids, Liquids & Solutions, Important Physical Properties of Solutes, Gases and Problems

3. Material Balances without chemical reactions :

Classification of Material Balance Problems, Material balances without chemical reactions, Outline Procedure for Material Balance calculations Distillation, Evaporation, Absorption, Extraction, Drying, Filtration, Mixing, Crystallization and problems on Material Balance.

4. Material balances with Chemical Reactions:

Stoichiometry, Stoichiometric equations, Stoichiometric Coefficients, Stoichiometric ratio, Limiting reactant , Excess reactant , Conversion, Yield and Selectivity and Problems on Material Balances with Chemical Reactions.

Semester – I Paper-III

Practicals

Paper-III

45 hours

Marks : 50

List of Experiments to be taken.

1. To Determine the Co-efficient of Venutrimeter.
2. To Determine the Co-efficient of Orifice meter.
3. To Study the Characteristics of Centrifugal Pump.
4. To Verify Hagen-Poisellue's Equation.
5. To Study the Pipe Fittings Test Rig.
6. Determination of PH, Turbidity, Conductivity , Temperature, TDS, of given water sample by water Quality Analyzer Elico-PE-138
7. Determination of Hardness of water by Complex metric method using EDTA
8. Determination of Calcium & Magnesium Hardness Using EDTA
9. Determination of Dissolved Oxygen in a water sample
10. Determination of Chemical Oxygen Demand
11. Determination of BOD of a Waste Water Sample
12. Experiment of Proximate Analysis of Coal:
Determine 1. Moisture 2. Volatile Matter 3. Ash 4. Fixed Carbon
13. Calculate Material Balance Rate of Evaporation for the given sample.
14. Perform Material Balance Calculation & Rate of drying of the given sample (Chalk / Sawdust)
15. To prepare various standard solution using (W/W , W/V , V/V) methods.

Industrial visit and preparation of the report on the aspects involved in the industry visited.

Industrial visit & submission of report

Viva

Reference Books:-

1. Practicals and Calculation in Engineering Chemistry – S.S. Dara,
2. Material Science – Soni

Semeseter II – Paper IV

Paper – IV: Aspects of Industrial Chemistry and Heat transfer

45 hours

Marks : 50

1 Heat Transfer :

(20 Hours)

1.1 Conduction :

Basic law of Conduction, Thermal conductivity, Compound resistances in series, Heat flow through a Cylinder.

1.2 Convection :

Classification of convection with mechanism

1.3 Radiation :

Absorptivity, Reflectivity and Transmissivity, Krichhoff's law, Laws of black body radiation, Steafan-Boltzmann law, Heat Transfer by radiation.

2 Heat Exchange Equipments:

Single pass tubular condenser, Double pipe heat exchanger, Counter Current and Parallel flow, Energy Balances, Enthalpy balances in heat exchangers, Enthalpy balances in total condensers, Overall Heat Transfer coefficients, LMTD . Individual Heat Transfer Coefficient, Calculation of Overall Coefficients from individual coefficeints, flouling factors.

(25 Hours)

3 Fuels:

Introduction , Calorific Value, Classification & Properties of Fuels.

3.1 Solid Fuels : Properties,Composition & Analysis of Coal

3.2 Gaseous Fuels : Classification, Natural Gas, LPG

3.3 Liquid Fuels : Petroleum, Composition & Classification, Definition of Flash Point & Fire Point, Knocking, Octane Number, aniline Point, Refining of Petroleum Cracking , Thermal & Catalytic Vracking, Reforming , thermal & Catalytic Reforming.

4 Water Analysis:

Chemical & Physical Examinatin of Water, Chemical substances affecting potability, colour, Turbidity, Odour, Taste, Temperature PH Conductivity , Suspended Solid, Acidity, Alkalinity, Free chlorine, Calcium & Magnesium , Dissolved Oxygen Biochemical Oxygen Demand , Chemical Oxygen Demand and Dissolved Solids.

5 Glass :

Introduction, Physical & Chemical Properties of Glass , Characteristics, raw Materials , Chemical Reactions, Methods of Manufacture of Glass & Uses.

6 Ceramics:

Introduction , Classification and General Properties of Ceramics, Basic raw materials, Manufacturing Process, Manufacture of Porcelain and China , Refractories, Classification, Properties, Manufacture of refractories, Manufacture of Fire Clay Bricks.

7 Cement:

Introduction, Composition , Types of cement, raw Materials, manufacture of Cement by wet & Dry process, Reaction in the Kiln, setting of cement, Testing & Uses of cement.

Reference Books:

1. Unit Operation of Chemical Engineering – McCabe Smith
2. Unit Operation –I (Fluid Flow & Mechanical Operations) – K.A. Gavhane
3. Unit Operation –II (Heat & Mass Transfer)- K.A. Gavhane
4. Heat Transfer- K.A. Gavhane
5. Principles of Heat Transfer & Mass Transfer – S.D. Dawande
6. Industrial Chemistry – B.K. Sharma.
7. Heat Transfer – Domkundwar
8. Fluid Mechanics – Jagdish Lal
9. Process Control – Eckman
10. Environmental Chemistry – A.K. De

Semester II - Paper V

Paper – V Energy Balances & Process Calculations

45 hours

Marks : 50

5. Recycle Operations :

Recycle stream , purging operation, Recycle ratio, and Problems

6. Energy balances :

Forms of Energy, Kinetic Energy , Potential Energy, Internal Energy, Heat, Work, General Energy Balance Procedure, Energy Balances on Closed Systems, Heat Capacity, Relation between C_p & C_v for an Ideal Gas, Empirical equation for Heat Capacities, Mean Molal Heat Capacities of Gases, Heat Capacities of gaseous mixture, Enthalpy Changes accompanying Chemical Reactions, Heat of Reactions, Heat of Formation, Standard Heat of Formation, Heat of Combustion, Hess's law of Constant Heat Summation, standard Heat of reaction from heat of formation, Standard Heat of Reaction from heats of Combustion, Effect of temperature on Heat of Reaction, Effect of Pressure on Heat of Reaction, Adiabatic Process, Adiabatic Reaction, Adiabatic Reaction Temperature, Phase Change Operation, Latent Heat of Vaporization Latent Heat of Fusion, Latent Heat of Sublimation, Energy Balance during Phase Change Operation, Heat of solution and Heat of Mixing .

7. Vapor Pressures: Vaporization Boiling Point, Vapour Pressures of solids, Effect of Temperature on Vapor Pressure.

Note: 60% weightage will be given to Problems.

Reference Books:

1. Chemical Process Principal – Hougen & Watson
2. Stoichiometry – B.I. Bhatt & S.M. Vora
3. Introduction to Process Calculutions (Stoichiometry)-K.A. Gavhane

Semester – II Paper-VI

Practicals

Paper-VI

45 hours

Marks : 100

List of Experiments:-

1. Determination of available Chlorine in Bleaching Powder
2. Estimation of Iron from Cement Volumetrically
3. Estimation of Calcium from lime stone
4. Determine Energy of Activation of the reaction between potassium persulphate and potassium Iodide
5. Preparation of $CUSO_4$ from Cu and its Material Balance
6. Calculate Material Balance rate of Evaporation for the given
7. Perform Material Balance calculations and rate of drying of the sample (Chalk/Sawdust)
8. To Study the Thermal Conductivity of Bad Conductor.
9. Determination of Acid Value of Lubricating Oil.
10. Determination of Saponification Value of Lubricating Oil.
11. Determination of Iodine Value of an Oil (Wij's Method)
12. Determination of Aniline Point of a Lubrication Oil.
13. Determination of Viscosity of Lubricant by Red Wood Viscometer.
14. Determination of Flash & Fire Point of Lubricating Oil by
 - a) Cleveland's Apparatus (Open Cup)
 - b) Abel's Apparatus (Closed Cup)
 - c) Pensky-Marten's Apparatus (Closed Cup).

Industrial visit and preparation of the report on the aspects involved in the industry visited.

Industrial visit & submission of report

Viva

Reference Book :

1. Water Analysis Hand Book - NEERI

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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 :-**

<i>Sr. No.</i>	<i>Revised Syllabus</i>	
[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.

..2..

:: [2] ::

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.

==**==

S*/080513/-

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



**Syllabus of
Fishery Science**

**B. Sc. First Year
(Semester I and II)**

(Effective from June 2013 and onwards)

Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.

FISHERY SCIENCE

Syllabus

B. Sc. I (Semester I and II)

(Revised Syllabus effective from June 2013)

Semester	Course Code	Paper	Title of Paper	Periods	Marks
I	Fish. Sci. 101	I	Morphology and Taxonomy	45	50
I	Fish Sci.102	II	Anatomy and Physiology	45	50
I	Fish Sci.103	III	Practical based on Theory paper I and II	45	50
II	Fish Sci.104	IV	Fish Ecology and Adaptation	45	50
II	Fish Sci.105	V	Fish Pathology and Parasitology	45	50
II	Fish Sci. 106	VI	Practical based on Theory paper IV and V	45	50

Dr. M. G. Babare

(Chairman B.O.S. in Fishery Sci.)

B. Sc. I (Fishery Science)

Semester I

Course Code – Fish Sci. – 101.

Morphology and Taxonomy

Paper No. - I

Total Periods – 45

Marks – 50

Unit – A

15 Periods

1) Introduction and external character of Fishes.

2) Fins and Locomotion:

Fins and locomotion, Types of locomotion, speed of travels.

3) Median and Paired fins:

Types of caudal fins, pectoral and pelvic fins and their origin, gill arch theory and fin fold theory.

Unit – B

15 Periods

1) Epidermis and Exo-skeleton:

Structure and functions of the skin, types of scales and their functions.

2) Origin and Evolution of fishes:

Introduction, origin of cartilaginous and bony fishes, Evolution of fishes.

3) General Characters, Identification and systematic position of fishes among chordates.

Unit – C

15 Periods

1) Broad outline of classification of fishes :

Introduction, Classification (Berg, Romer Berlin and Aram Bourg, Green Wood et al. Oul lander and line and plough et. al)

2) Cyclostomes :

Petromyzontia, Mysxinodea, Lampreys and Hag Fishes. Affinities of cyclostomes.

3) Elasmobranches :

General Characters of sharks and rays.

Holocephali :-

Salient Feature and its affinities.

Dipnoi :

General Characters and Affinities

Teleostomes :-

Characteristic Features up to major orders.

B. Sc. I (Fishery Science)

Semester I

Course Code – Fishery Sci. 102

Anatomy and Physiology

Paper No. – II

Total Periods – 45

Marks – 50

Units – A

15 Periods

- 1) Axial Skeleton
- 2) Visceral and appendicular skeleton.
- 3) Alimentary canal and associated digestive glands, physiology and digestion.

Unit – B

15 Periods

- 1) Structure and function of gill, Physiology of respiration, accessory respiratory organs.
- 2) Structure and function of heart, Arterial and Venous system, Blood and its components.
- 3) Structure and its function of Kidney osmoregulation.

Unit – C

15 Periods

- 1) Male and Female Reproductive Organs, Maturation and spawning.
- 2) Structure of Brain, Cranial Nerves and Spinal Nerves.
- 3) Endocrine glands in Fishes :**
Structure and function of Pituitary gland and Thyroid gland.

B. Sc. I (Fishery Science)

Semester I

Course Code – Fishery Sci. 103

(Practical Based on Paper No. - I and II)

Paper No. - III

Total Periods – 45

Marks – 50

- | | |
|---|-----------|
| 1) Identification and Classification of fishes :- | 06 |
| a) Holocephali – (Two from each class). | |
| b) Dipnoi – (Two from each class). | |
| c) Elasmobranchs –(Two from each class). | |
| d) Teleosts – (Two from each class). | |
| 2) Median and Paired fins – Different types of caudal fin. | 06 |
| 3) Temporary and permanent mounting of scales. | 09 |
| 4) Dissection : | 15 |
| (Any locally available bony fish) | |
| a) Digestive system. | |
| b) Respiratory system. | |
| Gills and accessory respiratory organs. | |
| c) Heart, Afferent and Efferent Branchial Vessels. | |
| d) Brain, Cranial nerves. | |
| e) Male and Female Reproductive System. | |
| 5) Histology :- | 09 |
| 1) T.S. of Stomach 2) T.S. of Intestine | |
| 3) T.S. of Liver 4) T.S. of Kidney | |
| 5) T.S. of Ovary 6) T.S. of Testis | |
| 7) T.S. of Pituitary glands. | |

B. Sc. I (Fishery Science)

Semester II

Course Code – Fishery Sci. 104

Fish Ecology and Adaptation

Paper No. - IV

Total Periods – 45

Marks – 50

Units – A

20 Periods

1) Introduction of Ecology –

- Primary Productivity of water mass and fish production.
- Tropic levels of Fish in food chain.
- Pyramid of numbers.
- Predator – Prey relationship.

2) Ecology of fresh water:-

Ecology of managed fish farm, Ponds, Rivers, Streams,
Reservoirs and Lakes.

3) Ecology of Brackish and Marine Water.

Units – B

10 Periods

1) Water Pollution :-

Introduction, Causes of Pollution, Type of Pollution, Effect of
pollutants on fishes, preservation and control of water pollution.

2) Migration of Fishes :-

3) Adaptations of Fishes to Environment –

10 Periods

- a) Density and pressure of the water.
- b) Salinity.
- c) Temperature.

- d) Salt Content.
- e) Gases in Solution.
- f) Light.
- g) pH.

Unit – C

05 Periods

- 1) Adaptation in the Hill stream fishes.**
- 2) Adaptation in Deep Sea fishes.**
- 3) Adaptation in Exotic Fishes.**

B. Sc. I (Fishery Science)

Semester II

Course Code – Fishery Sci. 105

Fish Pathology and Parasitology

Paper No. - V

Total Periods – 45

Marks – 50

Unit – A

15 Periods

- 1) Introduction.
- 2) Inflammation and immune response and pathological changes in tissues.
- 3) Signs of sickness and effect on fish and mode of contractions of infection.

Unit – B

15 Periods

Nutritional diseases and elements from environmental factors.

- 1) Disease caused by parasites and pathogens and its control measures.
- 2) Fungal Diseases, Bacterial Diseases.

Unit – C

15 Periods

- 1) Protozoan Diseases.
- 2) Worm Diseases.
- 3) Crustacean Diseases.

B. Sc I (Fishery Science)

Semester II

Course Code – Fishery Sci. – 106

(Practical based on theory Paper No. IV and V)

Paper No – VI

Total Periods – 45

Marks – 50

- 1) Identification of Fishes From Different Habitat. 06**
- a) Fresh water habitat – (Any Two)
 - b) Brackish water habitat – (Any Two)
 - c) Marine water habitat -(Any Two)
- 2) Identification of Fishes with special reference to the Adaptive characters of the following. 09**
- Exocoetus, Hippocampus, Echiurus, Pristis,
Hemiramphus, Zygaena, Trygon, Cynoglossus, Diadon,
Tetrodon, Ostracian, Lophius.
- 3) Water Analysis :- 12**
- Estimation of O₂, CO₂, pH and Alkalinity.
- 4) Identification and Collection of Endo and Ectoparasites of fishes. 18**

Chairman
(Dr. M. G. Babare)

List of Books Recommended for Papers – I, II, IV,V and Practical's

1. **Biswas K.P:** Prevention and control of fish and prawn diseases. Narendra Publishing House, New Delhi.
2. **C.J. Hiware:** Parasitology
3. **C.V. and Duitan:** Diseases of fishes Jr. Book Lt. London.
4. **Gotterman et. al:** Methods of physical and chemical analysis.
5. Hoar and Randall. Fish endocrinology Vol. I to VII. Academic press, INC (London) Ltd.
6. **Khanna S. S and H. R. Singh (2003):** A text book of fish biology and fisheries, Narendra Publishing House, New Delhi – 110 006.
7. **Khanna S. S:** An Introduction to fishes. Central Book Depot, Allahabad.
8. **Matty A. J and C. Room:** Timber Press, Protland, Oregon.
9. **Nilolsky G.Y:** The ecology of fishes. Academic Press, London.
10. **Norman J. R:** A. History of Fishes. Earnest Benn. Ltd. London.
11. **Pandey A. K and Sandhu G.S:** Encyclopedia of fishes and fisheries of India Vol. I and IV, Amol Publication, New Delhi.
12. **Reddy K. R. and M. G. Babare:** A manual in fishery Science.
13. **Reddy K. R. and M. G. Babare:** General topics in fishery Science.
14. **Santaram R. P:** Velayutheam and G. Tegateesan. A manual of fresh water ecology. Daya Publishing House, New Delhi.
15. **Sharma P.D:** Ecology and Environment Rastogi Publication, Meerut.
16. **Smith L.S:** Introduction of fish physiology. Narendra Publishing House, New Delhi.
17. **Srivastava C.B.L:** A text book of fishery science and Indian Fisheries, KitabMahal, Delhi.
18. **T.C. Chang:** Medical Parasitology.
19. **Weatherley A.H:** Growth and ecology of fish populations, Academic Press, London.
20. **Wench.** Limnology.
21. **Yadhav B. M:** Fish and Fisheries, Daya Publishing House, New Delhi.
22. **Yadhav B. N:** Fish endocrinology. Daya Publishing House, New Delhi.

S-29 Nov., 2013 AC after Circulars from Circular No.55 & onwards

- 41 -

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

परिपत्रक क्रमांक/एस.यु./विज्ञान/अभ्यासक्रम/७४/२०१४

या परिपत्रकाद्वारे सर्व संबंधितांना सुचित करण्यात येते की, विज्ञान विद्याशाखेने शिफारस केल्यानुसार बी. एस्सी. / एम. एस्सी. प्रथम व द्वितीय वर्षाच्या सुधारित अभ्यासक्रमास आणि बी. एस्सी. प्रथम वर्षाच्या अभ्यासक्रमात किरकोळ बदल करण्यास विद्यापरिषदेच्या वतीने मा. कुलगुरु यांनी, त्यांना प्राप्त असलेल्या विशेष अधिकार महाराष्ट्र विद्यापीठ अधिनियम-१९९४ कलम १४(७) अन्वये मान्यता दिलेली आहे. त्या अनुषंगाने सुधारीत तयार केलेल्या अभ्यासक्रमाची प्रत या परिपत्रकासोबत आपल्या पुढील कार्यवाहीसाठी पाठविण्यात येत आहे.

[1]	B.Sc. Physics	Semester-III & IV,
[2]	B.Sc. Chemistry	Semester-III & IV,
[3]	B.Sc. Botany	Semester-III & IV,
[4]	B.Sc. Zoology with minor changes	Semester-I & II,
[5]	B.Sc. Zoology	Semester-III & IV,
[6]	B.Sc. Fisheries	Semester-III & IV,
[7]	B.Sc. Electronics (Opt.)	Semester-III & IV,
[8]	B.A./B.Sc. Mathematics	Semester-III & IV,
[9]	B.Sc. Computer Science	Semester-I & II,
[10]	B.Sc. Information Technology	Semester-I & II,
[11]	B.C.A.	Semester-I & II,
[12]	B.Sc. Computer Science(Opt.)	Semester-I & II,
[13]	B.Sc. Information Technology(Opt.)	Semester-I & II,
[14]	B.Sc. Computer Application(Opt.)	Semester-I & II,
[15]	B.Sc. Computer Maintenance(Opt.)	Semester-I & II,
[16]	B.Sc. Biotechnology (Progressively)	Semester-I to VI,
[17]	B.Sc. Biotechnology (Opt.) (Progressively)	Semester-I to IV,
[18]	B.Sc. Sericulture Technology	Semester-I & II,
[19]	B.Sc. Networking Multimedia	Semester-III & IV,
[20]	B.Sc. Bioinformatics	Semester-I & II,
[21]	B.Sc. Hardware & Networking	Semester-I & II,
[22]	B.Sc. Animation	Semester-I & II,
[23]	B.Sc. Dairy Science & Technology	Semester-III & IV,
[24]	B.Sc. Biochemistry	Semester-III & IV,
[25]	B.Sc. Analytical Chemistry	Semester-III & IV,
[26]	B.Sc. Textile & Int. Decoration with minor changes	Semester-I & II,
[27]	B.Sc. Textile & Int. Decoration	Semester-III & IV,
[28]	B.Sc. Home Science with minor changes	Semester-I & II,
[29]	B.Sc. Home Science	Semester-III & IV,
[30]	B.Sc. Agro.Chem. & Fertilizers	Semester-III & IV,

S-29 Nov., 2013 AC after Circulars from Circular No.55 & onwards

- 42 -

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[31]	B.Sc. Geology	Semester-III & IV,
[32]	B.A. Statistics with minor changes	Semester-I & II,
[33]	B.A. Statistics	Semester-III & IV,
[34]	B.Sc. Statistics with minor changes	Semester-I & II,
[35]	B.Sc. Statistics	Semester-III & IV,
[36]	B.Sc. Industrial Chemistry	Semester-III & IV,
[37]	B.Sc. Horticultural	Semester-I & II,
[38]	B.Sc. Dry land Agriculture	Semester-I & II,
[39]	B.Sc. Microbiology	Semester-III & IV,
[40]	M.Sc. Computer Science	Semester-I to IV,
[41]	M.Sc. Information Technology	Semester-I to IV.

हा सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाचा आराखडा शैक्षणिक वर्ष २०१४-१५ करिता मर्यादित असेल व विद्यापरिषदेच्या अंतिम मान्यतेनंतर हे परिपत्रक नियमित देवण्याबाबत या कार्यालयाद्वारे नवीन परिपत्रक पारीत करण्यात येईल. तसेच सुधारीत व नवीन तयार केलेल्या अभ्यासक्रमाची प्रत विद्यापीठाच्या संकेतस्थळावर उपलब्ध आहे.

करिता, या परिपत्रकाची सर्व संबंधितांनी नोंद घ्यावी.

विद्यापीठ प्रांगण,
औरंगाबाद-४३१ ००४.
संदर्भ क्र.एस.यु./सा.शा./सबवि /२०१३-१४/
६५९९-७०२
दिनांक :- २७-०५-२०१४.

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संचालक,
महाविद्यालये व विद्यापीठ
विकास मंडळ.

या परिपत्रकाची एक प्रत :-

- १) मा. परिक्षा नियंत्रक, परिक्षा विभाग,
- २) मा. प्राचार्य, सर्व संलग्नीत महाविद्यालये,
- ३) संचालक, युनिक यांना विनंती करण्यात येते की, सदरील अभ्यासक्रम विद्यापीठाच्या संकेतस्थळावर उपलब्ध करुण देण्यात यावेत.
- ४) संचालक, ई-सुविधा केंद्र, विद्यापीठ परिसर,
- ५) जनसंपर्क अधिकारी, मुख्य प्रशासकीय इमारत,
- ६) कक्ष अधिकारी, पात्रता विभाग, मुख्य प्रशासकीय इमारत,
- ७) कक्ष अधिकारी, बी.ए. / बी.एस्सी./ बी.सी.एस./एम.एस्सी. विभाग, परीक्षा भवन,
- ८) अभिलेख विभाग, मुख्य प्रशासकीय इमारती मागे,
डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद.

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**Syllabus of
B.Sc. First Year**

Statistics [Optional]

Sem. I & II

effect for the academic year 2014-2015

SYLLABUS OF F.Y.B.Sc.

STATISTICS

2014-15

Semester	Theory Paper No.	Title Of The Paper	No. of Lectures per week	Marks Univ.
I	101	Descriptive Statistics-I	03	50
	102	Probability Theory	03	50
II	103	Descriptive Statistics-II	03	50
	104	Probability Distributions	03	50
Annual Practical	105 Practical I	Practicals Based On 101, 102, 103 & 104	04	100

Theory: 45 Lectures per paper

Practical: 60 Lectures per paper

First Year B.Sc. (Statistics)

Semester- I

Descriptive Statistics-I

Paper-101

Unit-I

(15 Lectures)

Introduction of some basic concepts

- 1.1 Introduction to statistics.
- 1.2 Scope and importance of Statistics.
- 1.3 Various definitions of Statistics.
- 1.4 Statistical Organisations
(ISI, NSSO, CSO,)
- 1.5 Statisticians and their contributions.
(R.A Fisher, Mahalonobis, C.R. Rao)
- 1.6 Primary and Secondary data, Types of data : qualitative, quantitative, discrete, continuous, cross-section, time series, failure, industrial, directional data.
- 1.7 Presentation of data.
 - a. Graphical presentation: Histogram, frequency polygon, frequency curves, ogive curves, stem and leaf charts, check sheet.
 - b. Diagrammatic presentation: Bar diagrams, Pie diagram, Parato diagram, scatter diagram.
- 1.8 Different types of scales:

Qualitative data (Attributes): Nominal and ordinal scales

Quantitative data (Variables): Interval and ratio scales, linear and circular scales.

- 1.9 Classification of data: Discrete and continuous frequency distributions, inclusive and exclusive methods of classification, relative and cumulative frequency distributions.

Unit II

(15 Lectures)

Measures of Central Tendency

- 2.1 Concept of central tendency. Prerequisites of ideal measure of central tendency.
- 2.2 Arithmetic mean (A.M.) for frequency and non frequency data (simple and weighted) trimmed mean, mean of pooled data.
- 2.3 Effect of change of origin and scale of A.M., properties of A.M. merits and demerits of A.M.
- 2.4 Mode: Computation for frequency and non-frequency data. Derivation of formula for mode. Computation of mode by graphical method. merits and demerits of mode.
- 2.5 Median: Computation for frequency and non-frequency data, computation by graphical method, merits & demerits of median. Empirical relation between mean, median and mode.
- 2.6 Geometric mean (G.M.) computation for G M for pooled data (for two groups.) G M for ratio of two variables. merits demerits and applications
- 2.7 Harmonic Mean (H M) computation for frequency, non-frequency data, merits, demerits,
- 2.8 Order relation between AM, GM, HM (with proof for $n=2$)
- 2.9 Selection of an average.

Unit-III

(15 Lectures)

Partition values & Measures of Dispersion

- 3.1 Concept of Dispersion and characteristics of good measure of dispersion.
- 3.2 Range and coefficient of range: merits, demerits and applications.
- 3.3 Partition values: Computation by formulae, computation by graphical method and Box plot. Quartile deviation (QD), coefficient of quartile deviation
- 3.4 Mean deviation (MD) about mean, mode, and median, coefficient of MD minimality property (with proof)
- 3.5 Variance, standard deviation (S.D.) effect of change of origin and scale on variance Variance for pooled data (Proof for two groups)
- S.D. \leq MD about mean
- Merits, demerits & uses of S.D.
- 3.6 Coefficient of variation (C.V.) uses of C.V., merits & demerits
- 3.7 Covariance: for frequency & non frequency data. Effect of change origin and scale & properties

3.8 Variance of linear combination

Probability Theory

Paper-102

Unit I

(15 Lectures)

Basic concepts in probability theory

- 1.1 Concepts of experiments and random experiments
- 1.2 Definitions: Sample Space, Discrete sample space (finite and countably infinite) Event, Elementary event, complement of an event.
- 1.3 Algebra of events (Union, Intersection and Complementation)
- 1.4 Definitions: Exhaustive events, Favourable events, Mutually Exclusive events, Equally Likely events, Independent events, Impossible events and certain events.
- 1.5 Power Set $P(\Omega)$ (sample space consisting at least three sample points.)
- 1.6 Symbolic representation of given events and description of events in symbolic forms.
- 1.7 Examples, based on 1.1 to 1.6
- 1.8 Apriori (Classical) definition of probability of an event. Equiprobable sample space, simple examples of computation of probability of the events based on Permutations & Combinations
- 1.9 Axiomatic definition of Probability (with reference to finite and countably infinite sample space)
- 1.10 Proof of the results
 - i $P(Q) = 0$
 - ii $P(A') = 1 - P(A)$
 - iii $P(A \cup B) = P(A) + P(B) - P(A \cap B)$ (with proof)
and its generalization (statement only)
 - iv if $A \subset B$, $P(A) \leq P(B)$
 - v $0 \leq P(A \cap B) \leq P(A) \leq P(A \cup B) \leq P(A) + P(B)$
- 1.11 Examples based on 1.10

Unit II

(15 Lectures)

Conditional Probability

- 2.1 Definition of conditional Probability
- 2.2 Multiplication theorem $P(A \cap B) = P(A) \cdot P(B/A)$
- 2.3 Partition of sample space.
- 2.4 Posteriori Probability
- 2.5 Statement and proof of Baye's Theorem
- 2.6 Elementary examples based on 2.1 to 2.5
- 2.7 Independence of events
- 2.8 Proof of the results that if A & B are independent then
 - i) $A \& B'$ ii) $A' \& B$ iii) $A' \& B'$ are independent
- 2.9 Pair wise & mutual independence of three events
- 2.10 Examples based on 2.7 to 2.9

Unit III

(15 Lectures)

Prerequisites of distribution functions

- 3.1 Definition of Discrete and continuous random variables.
- 3.2 Probability mass function (p.m.f.) and Probability density function.
(p.d.f.) cumulative distribution functions (discrete and continuous) their properties (Statements only)
- 3.3 Probability distribution function of a random variable
- 3.4 Median and Mode of univariate discrete & continuous Probability Distribution.
- 3.5 Examples based on 3.1 to 3.4
- 3.6 Expectation of a random variable and expectation of function of a random variable.
- 3.7 Properties of expectation.

- 3.8 Mean and variance of univariate distribution and effect of change of origin and scale on mean and variance.
- 3.9 Raw and Central moments of univariate distribution their relationship, skewness and kurtosis.
- 3.10 Probability generating function (p.g.f) of a random variable and computation of means and variance using p.g.f.
- 3.11 Examples based on 3.6 to 3.10

Semester II

Descriptive Statistics- II

Paper-103

Unit-I

(15 Lectures)

Moments & different measures

- 1.1 Moments about $x = a$: definition, computation for raw and grouped data.
- 1.2 Raw moments: Definition, computation for raw and grouped data.
- 1.3 Central moments: Definition, computation for raw and grouped data.
Effect of change of origin and scale.

Sheppard's corrections
- 1.4 Relation between raw and central moments up to 4th order
(with proof)
- 1.5 Skewness : Concept, types of skewness, measures of skewness
 - i Karl Pearson's
 - ii Bowley's, show that it lies between -1 and +
 - iii Pearsonian Coefficient of skewness (β_1, γ_1)
- 1.6 Kurtosis : Concept, types of Kurtosis, Pearsonian coefficients β_2, γ_2
- 1.7 The results
 - i $\beta_2 \geq 1$

ii $\beta_2 \geq \beta_1 + 1$ (with proof)

Unit-II

(15 Lectures)

Correlation & regression

- 2.1 Bivariate data, its frequency distribution
- 2.2 Correlation: Concepts, positive, negative correlation, interpretation of scatter diagram
- 2.3 Karl Pearson's Coefficient of correlation, computation for grouped, ungrouped data
- 2.4 Properties of Karl Pearson's Coefficient of correlation
 - i Effect of change of origin & scale
 - ii Limits (-1, +1)
 - iii $r_{xy} = r_{yx}$
- 2.5 Merits, demerits, interpretation, applications, of correlation
- 2.6 Spearman's rank correlation : Derivation of formula
(without repetition), for non repeated and repeated ranks computation- comparison of Karl Pearson's and Spearman's Correlation coefficient.
- 2.7 Regression : Concept, Independent and response variables, fitting of lines of regression by using principle of least squares (with derivation) Properties of lines of regression, Determination of angle between lines
- 2.8 Regression coefficient: Properties,
Difference between correlation and regression.

Unit-III

1Credit (15 lectures)

a) Theory of attributes

- 3.1 Attributes: Notations and definitions of dichotomy, class frequency, positive & negative classes, ultimate class frequency, fundamental set, relationship among different class frequencies (up to three attributes)

- 3.2 Concept of consistency and conditions of consistency (up to three attributes.)
- 3.3 Independence and association of attributes.
- 3.4 Yule's coefficient of association, (Q), coefficient of colligation (γ) and relation between Q & γ .
- b)** Vital Statistics
 - 3.5 Introduction and Uses of Vital Statistics
 - 3.6 Methods of Obtaining Vital Statistics
 - 3.7 Death Rates: i. Crude Death Rate
 - ii. Specific Death Rate
 - iii. Standardized Death Rate
 - 3.8 Fertility Rates: i. Crude Birth Rate
 - ii. General Fertility Rate
 - iii. Specific Fertility Rate
 - 3.9 Introduction to Life Tables and their Uses.

Probability Distributions

Paper-104

Unit I

(15 lecturers)

Bivariate probability distribution

- 1.1 Concept of Bivariate probability distribution (on finite sample space)
- 1.2 Definition of two dimensional discrete random variable, its joint probability mass function, distribution function and their properties.
- 1.3 Computation of probabilities of events in Bivariate probability distribution
- 1.4 Marginal and conditional probability distributions
- 1.5 Independence of two discrete random variables.
- 1.6 Mathematical expectation of jointly distributed random variables.
- 1.7 Conditional expectation, Conditional mean and variance

- 1.8 Raw and Central moments
- 1.9 Covariance, Coefficient of correlation, variance of linear combination
- 1.10 M.G.F :- Definition, Properties, theorems on MGF ,CGF :- Definition, Properties

Unit II

(15 lecturers)

Some standard discrete probability distributions

- 2.1 Definition of Bernoulli distribution and moments of the distribution
- 2.2 Additive property of Bernoulli distribution (Two variables)
- 2.3 Definition of Binomial distribution and applications of Binomial distribution
- 2.4 Mode of Binomial distribution
Moments and recurrence relation in moments of Binomial distribution.
- 2.5 Additive property of Binomial distribution
Fitting of Binomial distribution
- 2.6 Examples based on 2.1 to 2.5
- 2.7 Definition of Poisson distribution and applications.
- 2.8 Mode of Poisson distribution
Moments of Poisson distribution.

(Poisson distribution as a limiting form of Binomial distribution.)
- 2.9 Additive property and its generalization for Poisson distribution and fitting of Poisson distribution
- 2.10 Examples based on 2.7 to 2.9

Unit III

(15 lecturers)

Discrete probability distributions continued

- 3.1 Geometric Distribution :- Definition ,mean, variance,
- 3.2 MGF, Distribution function,
- 3.3 Lack of memory property,
- 3.4 Distribution of $x+y$ when x & y are independent Distribution of $\min(x,y)$
- 3.5 Negative Binomial Distribution :- Definition, mean, variance,

3.6 MGF,CGF, Skewness, kurtosis (recursive relation not expected)

3.7 Relation between geometric & -ve binomial.

3.8 Poisson approximation to -ve binomial.

Annual Practical Based on Theory Papers- 101,102,103& 104

Paper-105

List of Practicals

1. Representation by frequency distribution & Analysis of real life data collected by students.
2. Graphical Representation of data
3. Diagrammatic Representation of data
4. Computation of Arithmetic Mean
5. Computation of arithmetic mean by change of origin and scale.
6. Computation of Median for ungrouped and grouped data and graphical location.
7. Computation of Mode for ungrouped and grouped data and graphical location.
8. Computation of Quartiles, Deciles and Percentiles and their graphical location.
9. Computation of Quartile deviation and Mean deviation.
10. Computation of Variance, S.D. and coefficient of variation (C.V.)
11. Computation of raw moments for ungrouped and grouped data and computation of measures of skewness and kurtosis.
12. Computation of central moments using raw moments for ungrouped and grouped data and
13. computation of measures of skewness and kurtosis..
14. Computation of Karl Pearson's coefficient of correlation.
15. Computation of Spearman's Rank correlation
16. Fitting lines of regression and Verification of properties of regression coefficients
17. Attributes: Testing consistency of data
18. Computation of Coefficient of Association.
19. Computation of CDR, SFR and Standardized Death Rates.
20. Computation of CBR, SFR and GFR.
- 21 Problems based on Probabilities
- 22 Problems based on various results in Probability (1.10 of theory paper-II)
- 23 Problems based on addition and multiplication theorems of probability.

- 24 Problems based on conditional probability.
- 25 Problems based on Baye's theorem.
- 26 Problems based on mathematical expectation and its properties.
- 27 Problems based on mathematical expectation.
- 28 Computation of measures of central tendency using mathematical expectations – I
- 29 Computation of measures of dispersion using mathematical expectation.
- 30 Computation of measures of skewness and Kurtosis..
- 31 Problems based on univariate random variables.
- 32 Problems based on Binomial distribution.
- 33 Fitting of Binomial distribution
- 34 Problems based on Poisson distribution
- 35 Fitting of Poisson distribution
- 36 Computation of marginal, conditional probability distributions from bivariate probability distribution
- 37 Independence of two discrete random variables from a Bivariate Probability distribution.

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S-25 March, 2013 AC after Circulars from Circular No.153 & onwards

- 19 -

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY**CIRCULAR NO.ACAD/NP/Arts/B.A.-Ist Yr./SEM.-I & II/158/2013**

It is hereby notified for information of all concerned that, the syllabus prepared by the Boards of Studies, Ad-hoc Boards & Committee and recommended by the Faculty of Arts, the **Academic Council at its meeting held on 25-03-2013** has accepted the following revised syllabi for **B.A., B.Sc., B.Com., B.F.A. & B.S.W. for First Year as Optional, Second Language under the Faculty of Arts progressively :-**

Sr. No.	Revised Syllabus	
[1]	B.A. [Marathi]	Semester- I & II,
[2]	B.A. [Hindi]	Semester- I & II,
[3]	B.A. [English] [Compulsory, Optional & Second Language]	Semester- I & II,
[4]	B.A. [Urdu and Arabic]	Semester- I & II,
[5]	B.A. [Islamic Studies]	Semester- I & II,
[6]	B.A. [Sanskrit]	Semester- I & II,
[7]	B.A. [Pali & Buddhism]	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/ARTS/IST YEAR/
Sem-I & II/2013/5548-4968
A.C.M.A.I.No.16.

Date:- 08-05-2013.

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(Signature)
13/05
Director,
Board of College and
University Development.

S-25 March, 2013 AC after Circulars from Circular No.153 & onwards

- 20 -

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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.A. Unit],
- 3] The Superintendent, [B.Sc. Unit],
- 4] The Superintendent, [B.Com. Unit],
- 5] The Superintendent, [Eligibility Unit],
- 6] The Programmer [Computer Unit-1] Examinations,
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Dr. Babasaheb Ambedkar Marathwada University,
- 9] The Public Relation Officer,
- 10] The Record Keeper,
Dr. Babasaheb Ambedkar Marathwada University.

S*/080513/-

**DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY
AURANGABAD**



**SYLLABUS
OF
COMPULSORY ENGLISH, OPTIONAL ENGLISH AND
ADDITIONAL ENGLISH (SL) COURSE
FOR
B.A./B.COM./B.SC./B.S.W./B.F.A. FIRST YEAR
SEMESTER ONE AND TWO**

[EFFECTIVE FROM JUNE 2013-2014 AND ONWARDS]

**DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY
AURANGABAD**



**SYLLABUS
OF
COMPULSORY ENGLISH, OPTIONAL ENGLISH AND ADDITIONAL
ENGLISH (SL) COURSE
FOR
B.A./B.COM./B.SC./B.S.W./B.F.A.FIRST YEAR
SEMESTER ONE AND TWO
EFFECTIVE FROM JUNE 2013 AND ONWARDS**

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SYLLABUS

COMPULSORY ENGLISH COURSE

B.A. /B.COM. /B.SC. /B.S.W. /B.F.A. FIRST YEAR

THE COURSE OF COMPULSORY ENGLISH CONSISTS OF ONE PAPER TO BE STUDIED IN TWO SEMESTERS.

TITLE OF THE PAPER: **LEARNING LANGUAGE SKILLS-I: PAPER-I, II**

CODE OF THE PAPER: **CLE- 1**

AIM OF THE COURSE

*To strengthen students' ability in listening, speaking, reading and writing both at practical and theoretical level.

OBJECTIVES OF THE COURSE

*To introduce students to the grammatical properties in order to enable them to write and speak English consciously.

*To train them both in precision and in appropriate use of language through prose reading.

*To acquaint students with a keen and subtle way in which the English language is used.

CONTENT OF THE COURSE (SEMWISE)

SEMESTER ONE

PAPER-I: LEARNING LANGUAGE SKILLS-I 50 MARKS

UNIT ONE: PROSE 15 MARKS

- 1) *Happy Prince*- Oscar Wilde
- 2) *Good Manners*- J.C. Hill
- 3) *The Eyes Are Not Here*- Ruskin Bond
- 4) *Forgetting*- Robert Lynd
- 5) *Home Coming*- Rabindranath Tagore

UNIT TWO: POETRY 15 MARKS

- 1) *One Day I Wrote Her Name upon the Strand*- Edmund Spenser
- 2) *Ode on Solitude*- Alexander Pope
- 3) *If*- Rudyard Kipling
- 4) *My Love Is Like Red Red Rose*- Robert Burns
- 5) *Stopping by Woods on a Snowy Evening*- Robert Frost

PRESCRIBED TEXT: **LANGUAGE THROUGH LITERATURE: an anthology of prose and poetry** by The Board of Studies in English, Published by Orient Blackswan Pvt. Ltd. Hyderabad, 2012.

UNIT THREE: GRAMMAR

12 MARKS

- 1) Parts of Speech
- 2) Nouns: classes and gender; number and case.
- 3) Adjectives: kinds of adjectives; comparison of adjectives; the correct use of some adjectives and articles.
- 4) Pronouns: personal pronouns, reflexive pronouns, demonstrative pronouns, interrogative pronouns, distributive pronouns, relative pronouns.
- 5) Verbs: transitive and intransitive; verbs and mood: indicative mood, imperative mood, subjunctive mood; the auxiliaries: be, have, do, shall, can, must; modal auxiliaries.
- 6) Adverbs: kinds: simple, interrogative and relative; formation of adverbs; position of adverbs.
- 7) Prepositions: phrase prepositions; object of prepositions; relations shown by prepositions; correct use of prepositions.
- 8) Conjunctions: phrase conjunctions; coordinating and subordinating conjunctions; correct use of some conjunctions.
- 9) Interjections

PRESCRIBED TEXT: **BASIC ENGLISH GRAMMAR AND COMPOSITION**, Edit. By Board of Studies in English, Pub. By Macmillan Publishers India Ltd., Mumbai: 2013.

UNIT FOUR: PRECIS WRITING

8 MARKS

SEMESTER TWO

PAPER-II: LEARNING LANGUAGE SKILLS-I

50 MARKS

UNIT ONE: PROSE

15 MARKS

- 1) *The Bet*- Anton Chekov
- 2) *The Three Questions*- Leo Tolstoy
- 3) *With the Photographer*- Stephen Leacock
- 4) *National Prejudices*- Oliver Goldsmith
- 5) *Playing the English Gentleman*- Mahatma Gandhi

UNIT TWO: POETRY

15 MARKS

- 1) *Where the Mind is Without Fear*- Rabindranath Tagore
- 2) *The Solitary Reaper*- William Wordsworth
- 3) *Ozymandias of Egypt*- P.B.Shelly
- 4) *Laugh and be Merry*- John Masefield
- 5) *The Toys*- Coventry Patmore

PRESCRIBED TEXT: **LANGUAGE THROUGH LITERATURE: an anthology of prose and poetry** by The Board of Studies in English, Published by Orient Blackswan Pvt. Ltd. Hyderabad, 2012.

UNIT THREE: GRAMMAR

12 MARKS

- 1) Tenses; the Simple Present, the Present Continuous, and the Simple Past
- 2) The Present Perfect and the Simple Past
- 3) The Past Continuous and the Past Perfect
- 4) The Present Perfect Continuous and the Past Perfect Continuous
- 5) Future Tense
- 6) The Uses of the Tenses

PRESCRIBED TEXT: **BASIC ENGLISH GRAMMAR AND COMPOSITION**, Edit. By Board of Studies in English, Pub. By Macmillan Publishers India Ltd., Mumbai: 2013.

UNIT FOUR: PARAGRAPH WRITING

8 MARKS

Recommended Reading for Grammar Units:

- 1) *Contemporary English Grammar Structures and Composition* by David Green Pub. By Macmillan Publishers India Ltd., 2011 edition.
- 2) *Modern English: A Book of Grammar Usage and Composition*, By N.Krishnaswami, Pub. By Macmillan Publishers India Ltd. 2009.

Note: Model question paper will be incorporated.

SYLLABUS
OPTIONAL ENGLISH COURSE
B.A. FIRST YEAR

THE COURSE OF OPTIONAL ENGLISH CONSISTS OF TWO PAPERS TO BE STUDIED IN TWO SEMESTERS SIMULTANEOUSLY.

PAPER-I: THE STRUCTURE OF ENGLISH

CODE OF THE PAPER: **OPE -1**

PAPER-II: READING LITERATURE

CODE OF THE PAPER: **OPE -2**

PAPER-I: THE STRUCTURE OF ENGLISH

50 MARKS

AIM OF THE COURSE

*The course aims at giving students advanced knowledge of English in matter of speaking and writing.

OBJECTIVES OF THE COURSE

*To help students towards better pronunciation.

*To enable students to acquire the structure of English language.

CONTENT OF THE COURSE (SEMWISE)

SEMESTER ONE

UNIT ONE: PHONETICS

20 MARKS

- 1) Phonetic Symbols.
- 2) The Articulation of Speech Sounds.
- 3) Classification of Speech Sounds: Description of Consonants and Vowels.
- 4) The Syllable
- 5) Pure Vowels and Diphthongs; the Consonants of English

PRESCRIBED TEXT: **A TEXTBOOK OF ENGLISH PHONETICS FOR INDIAN STUDENTS**, 2nd Edition, By T. Balasubramanian, Macmillan Publishers India Ltd. Mumbai, 2013.

Recommended Reading: **English Phonetics for Indian Students: A Workbook**, By T. Balasubramanian, Macmillan, 2011.

UNIT TWO: GRAMMAR

30 MARKS

1) Simple Sentence Pattern: subject and predicate; form and function; the basic patterns; sentence types.

2) Phrases: noun phrase, verb phrase, adjective phrase, adverb phrase, prepositional phrase.

PRESCRIBED TEXT: **A COURSE IN ENGLISH GRAMMAR** by R.N. Bakshi, Orient Black Swan Pvt. Ltd. 2010.

SEMESTER TWO

PAPER-III: THE STRUCTURE OF ENGLISH

50 MARKS

UNIT THREE: PHONETICS

20 MARKS

1) Word Accent in English

2) Accent and Rhythm in Connected Speech

3) Intonation

4) Phonetic Transcription

PRESCRIBED TEXT: **A TEXTBOOK OF ENGLISH PHONETICS FOR INDIAN STUDENTS**, 2nd Edition, By T. Balsubramanian, Macmillan Publishers India Ltd. Mumbai, 2013.

UNIT FOUR : GRAMMAR

30 MARKS

1) Complex Sentences-I

2) Complex Sentences-II

3) Word Formation

PRESCRIBED TEXT: **A COURSE IN ENGLISH GRAMMAR** by R.N. Bakshi, Orient Blackswan Pvt. Ltd. 2010.

Note: Model question paper will be incorporated.

PAPER-II: READING LITERATURE

50 MARKS

AIM OF THE COURSE

*To enable students to read and appreciate various forms of literature and critically interact with them from different perspectives.

OBJECTIVES OF THE COURSE

*To introduce students to appropriate literary strategies to read literature.

*To pinpoint how far literary language deviates from ordinary language.

*To unravel many meanings in a literary text.

CONTENT OF THE COURSE (SEMWISE)

SEMESTER ONE

UNIT ONE: METHODOLOGY OF LITERATURE 16 MARKS

- 1) Poetical types: the lyric, the sonnet.
- 2) The novel: the novel and the other forms, its structure, purpose and meaning.

UNIT TWO: SHAKESPEARE'S SONNETS 14 MARKS

- 1) Sonnet no. 29: '*When in Disgrace...*'
- 2) Sonnet no. 60: '*Like as the Waves...*'
- 3) Sonnet no. 73: '*That Time of Year...*'
- 4) Sonnet no.116: '*Let me Not...*'
- 5) Sonnet no. 130: '*My Mistress's Eyes...*'

PRESCRIBED TEXTS: 1) **A BACKGROUND TO THE STUDY OF ENGLISH LITERATURE**, (Rev.edi) by B. Prasad, Pub. By Macmillan Publishers India Ltd. 2006.

2) **THE WINGED WORD: AN ANTHOLOGY OF POEMS FOR DEGREE COURSE**, edit. By David Green, Macmillan Publishers India Ltd 2007.

UNIT THREE: NOVEL 20 MARKS

THE GUIDE BY R. K. NARAYAN.

SEMESTER TWO

PAPER-IV: READING LITERATURE 50 MARKS

UNIT FOUR: METHODOLOGY OF LITERATURE 16 MARKS

- 1) Poetical types: Odes 2) Dramatic types: tragedy and comedy

UNIT FIVE: JOHN KEATS' ODES 14 MARKS

- 1) *Ode to Nightingale* 2) *Ode to Autumn*
- 3) *Ode on a Grecian Urn*

UNIT SIX: DRAMA 20 MARKS

ARMS AND THE MAN BY G.B. SHAW.

PRESCRIBED TEXTS: 1) **A BACKGROUND TO THE STUDY OF ENGLISH LITERATURE** by B. Prasad, Macmillan India Ltd. 2006.

2) **THE WINGED WORD: AN ANTHOLOGY OF POEMS FOR DEGREE COURSE**, Edit. By David Green, Macmillan Publishers India Ltd 2007.

Note: Model question paper will be incorporated.

SYLLABUS

ADDITIONAL ENGLISH (S.L.) COURSE

B.A./B.COM./B.SC./B.S.W./B.F.A. FIRST YEAR

THE ADDITIONAL ENGLISH COURSE CONSISTS OF ONE PAPER TO BE STUDIED IN TWO SEMESTERS

TITLE OF THE PAPER: **ADDITIONAL ENGLISH- PAPER-I, II**

CODE OF THE PAPER: **SLE -1**

CONTENT OF THE COURSE (SEMWISE)

SEMESTER ONE

PAPER-I: ADDITIONAL ENGLISH (S.L.) 50 MARKS

UNIT ONE: FICTION 30 MARKS

ANIMAL FARM BY GEORGE ORWELL

UNIT TWO: PRECIS AND COMPREHENSION 10 MARKS

UNIT THREE: PARAPHRASING AND EXPANSION 10 MARKS

PRESCRIBED TEXT: **BASIC ENGLISH GRAMMAR AND COMPOSITION**, Edit. By Board of Studies in English, Pub. By Macmillan Publishers India Ltd., Mumbai: 2013.

SEMESTER TWO

PAPER-II: ADDITIONAL ENGLISH (S.L.) 50 MARKS

UNIT ONE: DRAMA 30 MARKS

NAGA-MANDAL BY GIRISH KARNAD

UNIT TWO: LETTER WRITING 10 MARKS

UNIT THREE: ESSAY WRITING 10 MARKS

PRESCRIBED TEXT: **BASIC ENGLISH GRAMMAR...**

Note: Model question paper will be incorporated.

ACKNOWLEDGEMENT

The Board of Studies in English gratefully acknowledges the valuable suggestions from teachers of colleges regarding the content of the course. The Board also acknowledges supports from the University in this matter.

28 January, 2013
University Campus



Chairman

Board of Studies in English
Dr. B. A. M. University Aurangabad

S-25 March, 2013 AC after Circulars from Circular No.153 & onwards

- 19 -

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY**CIRCULAR NO.ACAD/NP/Arts/B.A.-Ist Yr./SEM.-I & II/158/2013**

It is hereby notified for information of all concerned that, the syllabus prepared by the Boards of Studies, Ad-hoc Boards & Committee and recommended by the Faculty of Arts, the **Academic Council at its meeting held on 25-03-2013** has accepted the following revised syllabi for **B.A., B.Sc., B.Com., B.F.A. & B.S.W. for First Year as Optional, Second Language under the Faculty of Arts progressively :-**

Sr. No.	Revised Syllabus	
[1]	B.A. [Marathi]	Semester-I & II,
[2]	B.A. [Hindi]	Semester-I & II,
[3]	B.A. [English] [Compulsory, Optional & Second Language]	Semester-I & II,
[4]	B.A. [Urdu and Arabic]	Semester-I & II,
[5]	B.A. [Islamic Studies]	Semester-I & II,
[6]	B.A. [Sanskrit]	Semester-I & II,
[7]	B.A. [Pali & Buddhism]	Semester-I & II.

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

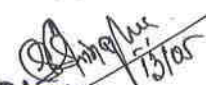
These syllabi are available on the University Website **www.bamu.net**

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/ARTS/1ST YEAR/
Sem-I & II/2013/5548-4968
A.C.M.A.I.No.16.

Date:- 08-05-2013.

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Director,
Board of College and
University Development.

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S-25 March, 2013 AC after Circulars from Circular No.153 & onwards

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- 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].**

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- 8] The Director, [E-Suvidha Kendra], in-front of Registrar's Quarter,
Dr. Babasaheb Ambedkar Marathwada University,
- 9] The Public Relation Officer,
- 10] The Record Keeper,
Dr. Babasaheb Ambedkar Marathwada University.

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S-[F] NPW-02 June-2013-14 All Syllabus Arts Faculty B.A. Marathi Sem.-I & II 2003

- 3 -

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



Syllabus of

Marathi (First Language)

B.A./B.COM./B.SC./B.F.A/B.S.W.

Semester- I & II

(Effective from 2013 - 2014 & onwards)

डॉ. सदाशिव सरकटे
अध्यक्ष-मराठी अभ्यास मंडळ
डॉ. बाबासाहेब आंबेडकर
मराठवाडा विद्यापीठ,
औरंगाबाद.

S-[F] NPW-02 June-2013-14 All Syllabus Arts Faculty B.A. Marathi Sem.-I & II OK

- 4 -



डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

बी.ए./बी.कॉम./बी.एस्सी./बी.एस.डब्ल्यू

प्रथम वर्ष मराठी (प्रथम भाषा) (सत्र पहिले व सत्र दुसरे)

कोड नं. MAR001, MAR002

अभ्यासपत्रिका गद्य - पद्य व उपयोजित मराठी

संपादक मंडळ

(मराठी अभ्यास मंडळ)

अ.क्र.	नाव	पद
०१	डॉ. सरकटे सदाशिव हरिभाऊ	अध्यक्ष
०२	डॉ. हंडीबाग भारत सोपानराव	सदस्य
०३	डॉ. गिमेकर परशुराम लक्ष्मण	सदस्य
०४	डॉ. घोंडगे मुंजा बाबुराव	सदस्य
०५	डॉ. पाटंगणकर विद्यासागर जनार्दन	सदस्य
०६	डॉ. शिंदे संजय दासू	सदस्य
०७	डॉ. तुपे केशव परबत	सदस्य
०८	डॉ. नळगे राजशेखर शरणप्या	सदस्य
०९	प्राचार्य डॉ. बिरादार वसंत भाणिकराव	सदस्य
१०	डॉ. सार्वेकर केलास नारायण	सदस्य

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

बी. ए. / बी. कॉम. / बी. एस्सी./बी.एस.डब्ल्यू.

प्रथम वर्ष मराठी अभ्यासक्रमाकरिता

शैक्षणिक वर्ष जून २०१३ -२०१४ पासून

अभ्यासक्रमाची उद्दिष्टे :

- (१) विद्यार्थी हे केंद्र-बिंदू मानून त्याचे भाषिक आकलन - आविष्करण समृद्ध करणे.
- (२) प्रथम वर्षाच्या विद्यार्थ्यांचे वय / मानसिकता / क्षमता लक्षात घेऊन त्यांचा विकास घडवून आणण्याच्या दृष्टीने अध्ययन सामग्री देणे.
- (३) प्रथम वर्ष हा पाया समजून पायाभूत वाङ्मयीन व भाषिक कौशल्याचे ज्ञान उपलब्ध करून देणारा अध्ययन क्रम सिद्ध करणे.
- (४) मराठीतील जुन्या , नव्या कवी / लेखकांच्या कलाकृतींचा परिचय व्हावा म्हणून निवडक काव्य / कथा/ कथांश सिद्ध करून देणे.
- (५) पदवी पातळीवरील अभ्यासक्रमाची सिद्धता ही पदव्युत्तर अभ्यासाची पूर्वतयारी असते याचे भान ठेवून अध्यापन साधने पुरवणे.
- (६) स्पर्धा परीक्षेच्या / व्यावहारिक भाषिक कौशल्याच्या दृष्टीने भाषिक कौशल्याचे ज्ञान देणे.
- (७) दैनंदिन भाषा वापर , साहित्यातील उपयोग व कार्यालयीन उपयोजनांचा विचार.
- (८) माध्यमांच्या दृष्टीने अध्ययनाची कक्षा ठरवणे.
- (९) भाषेतील संवाद / उच्चार /लेखन/ विस्तार / शब्दसंग्रह यांचा परिचय.
- (१०) मराठी भाषेतील जुन्या / नव्या भाषेच्या वापराचा अर्थ , काव्यार्थ, सूचकता , तत्कालीन भाषिक शब्दकळा ,परभाषा , पर्यावरण , मानवी मूल्य , सुसंस्कार , सामाजिक संदर्भ / सांस्कृतिकता याचा काव्य / गद्य अंशाच्या निमित्ताने परिचय घडवणे.

घटक विश्लेषण :

- १) अभ्यासक्रमात समाविष्ट करण्यात आलेल्या पाठाच्या लेखकांचा व कवितेच्या कवींचा परिचय करून देणे.
- २) पाठातील व कवितेतील आशय समजावून देणे.
- ३) पाठातील सामाजिक मूल्य आकलन करून देणे.
- ४) कवितेतील सामाजिक,सांस्कृतिक मूल्य समजावून देणे.
- ५) विद्यार्थ्यांना नीटपणे लिहिता वाचता यावे,उच्चार स्पष्ट करता यावे,वाक्यरचना नीट करता यावी, यासाठी मराठी लेखन विषयक नियम समजावून सांगणे.
- ६) कार्यालयीन लेखन तंत्राविषयी माहिती करून देणे.
- ७) योग विद्याभ्यासाची माहिती सांगणे.
- ८) वाचन संस्कृती वृद्धिंगत होण्यासाठी विद्यार्थ्यांना ग्रंथालये व ग्रंथ यासंबंधीची माहिती सांगणे.
- ९) पत्र लेखनाचे व भाषांतराचे आकलन करून देणे.

S-[F] NPW-02 June-2013-14 All Syllabus Arts Faculty B.A. Marathi Sem.-I & II OK

- 7 -

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

बी. ए. / बी. कॉम. / बी. एस्सी./बी.एस.डब्ल्यू.

प्रथम वर्ष मराठी (प्रथम भाषा) अभ्यासक्रमाकरिता

शैक्षणिक वर्ष जून २०१३ -२०१४ पासून

सत्र पहिले

कोड नं. MAR००१: अभ्यास पत्रिका गद्य-पद्य व उपयोजित मराठी

भाग १ ला

तासिका - २०

गद्य विभाग**अ- घटक**

(१)	ससीक रक्षण	-	म्हाडंभट
(२)	अर्जदस्त	-	संत एकनाथ
(३)	राजाची कर्तव्ये	-	रामचंद्रपंत अमात्य
(४)	जिजाऊ आमची सून जाली	-	दत्ताजी त्रिमल वाकेनवीस
(५)	तुम्ही सदाचरणाने वागा	-	ताराबाई शिंदे
(६)	परमेश्वराचे भवितव्य !	-	श्री.म.माटे

पद्य विभाग**ब - घटक**

तासिका-२०

(१)	घुळी आतील रत्न	-	मुकुंदराज
(२)	कुश्चळ भूमीवरी उगवली तुळसी	-	संत नामदेव
(३)	आनंदे वीवीया	-	संत निर्मळा
(४)	भासा बांधोनि मराठिया	-	फादर स्टिफन्स
(५)	पूर्वभाग्यदिशा	-	संत जनीजनार्दन
(६)	पाडसदेवा	-	संत दासोपंत
(७)	यातिभेद कुळकर्म गुरुर्षी मूळ नाहिरे	-	रामानंद स्वामी
(८)	ऐसे केलेया गोपाळे	-	संत शेख महंमद
(९)	मन करा रे प्रसन्न	-	संत तुकाराम
(१०)	तुझ्या प्रीतीचे	-	होनाजी -बाळा
(११)	सत्याग्रही बसव (अनु वचने)	-	जयदेवीताई लिंगाडे

उपयोजित मराठी

क-घटक

तासिका-२०

- (१) लेखन-विषय नियम
- (२) पत्र-लेखन (कोटुंबिक व कार्यालयीन)
- (३) विराम-चिन्हे
- (४) भाषांतर (इंग्रजी उताऱ्याचे मराठी भाषांतर ४० ते ५० शब्दात)

S-[F] NPW-02 June-2013-14 All Syllabus Arts Faculty B.A. Marathi Sem.-I & II OK

- 9 -

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

बी. ए. / बी. कॉम. / बी. एस्सी./बी.एस.डब्ल्यू.

प्रथम वर्ष मराठी (प्रथम भाषा) अभ्यासक्रमाकरिता

शैक्षणिक वर्ष जून २०१३ -२०१४ पासून

सत्र दुसरे

कोड नं. MAR००२: अभ्यास पत्रिका गद्य-पद्य व उपयोजित मराठी

भाग- २ रा

गद्य विभाग

अ-घटक

तासिका-२०

(१)	शेवटचे कीर्तन	-	संत गाडगेबाबा
(२)	देशाचे भवितव्य	-	डॉ. बाबासाहेब आंबेडकर
(३)	लोकभाषा हीच ज्ञानभाषा	-	यशवंतराव चव्हाण
(४)	कोवळे मरण	-	भालचंद्र नेमाडे
(५)	ठिणगी	-	रामराव झुंजारे
(६)	भूक	-	महादेव गायकवाड

पद्य विभाग

ब-घटक

तासिका-२०

(१)	कुळंबिण	-	म. जोतिबा फुले
(२)	निर्झरास	-	बालकवी
(३)	नवमहाराष्ट्र गीत	-	सुरेश भट
(४)	आई	-	प्रेस
(५)	गिरोबा	-	वीर घवल परब
(६)	मल्टीलुटालुटीचा झिंग लपालपा	-	अरुण काळे
(७)	बिरसा मुंडा	-	भुजंग मेश्राम
(८)	गुणवत्तेचा निकष	-	संभाजी सावळकर
(९)	ग्लोबल मेंदीची नक्षी	-	अजीम नवाज राही
(१०)	बाप	-	संजय आघाव
(११)	काय असतं प्रेम	-	प्रतीक्षा गायकवाड

उपयोजित मराठी

क-घटक

तासिका-२०

- (१) घोषवाक्य (सामाजिक / राजकीय / पर्यावरण / सांस्कृतिक)
- (२) संवाद लेखन
- (३) अहवाल लेखन
- (४) जाहिरात लेखन

उपयोजित मराठी या विभागासाठी

संदर्भ ग्रंथ :

१. मराठी शुद्धलेखनविषयक नियम : मो.रा.वाळंबे
२. वस्तुनिष्ठ आकलन आणि
उपयोजित मराठी लेखन : प्रा.नरेंद्र मारवाडे
३. उपयोजित मराठी : प्रकाश मेदककर
४. उपयोजित मराठी : ल.रा. नसिराबादकर
५. व्यावहारिक मराठी : प्रकाश परब
६. मराठी लेखन मार्गदर्शिका : यास्मिन शेख

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



Syllabus of

Marathi (Optional)

B.A. First Year

Semester- I & II

(Effective from 2013 - 2014 & onwards)



डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

बी.ए.प्रथम वर्ष

ऐच्छिक (सत्र पहिले व सत्र तिसरे)

अभ्यासपत्रिका कोड नं. MAR101 काव्यात्म साहित्य (अभ्यासपत्रिका पहिली)

अभ्यासपत्रिका कोड नं. MAR103 कथात्म साहित्य (अभ्यासपत्रिका तिसरी)

संपादक मंडळ

(मराठी अभ्यास मंडळ)

अ.क्र.	नाव	पद
०१	डॉ. सरकटे सदाशिव हरिभाऊ	अध्यक्ष
०२	डॉ. हंडीबाग भारत सोपानराव	सदस्य
०३	डॉ. गिमेंकर परशुराम लक्ष्मण	सदस्य
०४	डॉ. धोंडगे मुंजा बाबुराव	सदस्य
०५	डॉ. पाटंगणकर विद्यासागर जनार्दन	सदस्य
०६	डॉ. शिंदे संजय दासू	सदस्य
०७	डॉ. तुपे केशव परबत	सदस्य
०८	डॉ. नळगे राजशेखर शरणप्या	सदस्य
०९	प्राचार्य डॉ. बिरादार वसंत भाणिकराव	सदस्य
१०	डॉ. सार्वेकर कैलास नारायण	सदस्य

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

शैक्षणिक वर्ष जून २०१३ -२०१४ पासून

विषय: मराठी, बी.ए.प्रथम वर्ष (ऐच्छिक)

कोड नं. MAR-१०१

अभ्यासपत्रिकेचे नाव : काव्यात्म साहित्य

(अभ्यासपत्रिका पहिली)

तासिका-६०

सत्र पहिले

निवडक कवींच्या कवितांचा अभ्यास

(१) केशवसुत

- १.१ कोणीकडून ? कोणीकडे
- १.२ मूर्तिमंजन
- १.३ तुतारी
- १.४ कविता आणि कवि
- १.५ प्रीति

(२) बहिणाबाई चौधरी

- २.१ मन
- २.२ संसार
- २.३ उगवले नारायण
- २.४ खोपा
- २.५ हिरीताचं देनं घेनं

(३) कुसुमाग्रज

- ३.१ सात
- ३.२ माळाचे मनोगत
- ३.३ स्वप्नांची समाप्ती
- ३.४ अश्वत्थामा
- ३.५ सर्वात्मका शिवसुंदरा

(४) नारायण सुर्वे

- ४.१ दोन दिवस
- ४.२ मनी - ऑडर
- ४.३ कार्ल मार्क्स
- ४.४ तुमचंच नाव लिवा
- ४.५ चार शब्द

(५) अरुण कोलटकर

- ५.१ श्रीज्ञानेश्वरसमाधिवर्णन
- ५.२ मेणवती
- ५.३ घाणा
- ५.४ अन्न
- ५.५ भूपाळी

(६) नामदेव ढसाळ

- ६.१ रमाबाई आंबेडकर
- ६.२ पाणी
- ६.३ कॉम्रेड अर्थात १२ बलुतेदारांसाठी
- ६.४ मूर्ख म्हातान्याने डोंगर हलविले
- ६.५ अंधाराने सूर्य पाहिला तेव्हा

डॉ.बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ,औरंगाबाद

शैक्षणिक वर्ष जून २०१३ -२०१४ पासून

विषय:मराठी बी.ए.प्रथम वर्ष (ऐच्छिक)

कोड नं.MAR-१०२

अभ्यासपत्रिकेचे नाव : नाट्यात्म साहित्य

(अभ्यासपत्रिका दुसरी)

सत्र पहिले

तासिका -६०

नाट्यात्म साहित्य

१. अ) फाटलेला पतंग ब) चिंगी महिन्याची झाली नाही तोच - शंकर गोविंद दिवाकर
२. उपरे - रा.रं.बोराडे
३. मुलगी झाली हो..... - ज्योति महापसेकर
४. यातना उत्सव - बापू घोक्षे

DR. BABASAHEB AMBEDKAR MARATHWADA

UNIVERSITY, AURANGABAD.



Syllabus of

Marathi (Optional)

B.A. First Year

Semester- I & II

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डॉ.बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ,औरंगाबाद

शैक्षणिक वर्ष जून २०१३ -२०१४ पासून

विषय: मराठी बी.ए.प्रथम वर्ष (ऐच्छिक)

कोड नं.MAR-१०३

अभ्यासपत्रिकेचे नाव : कथात्म साहित्य

(अभ्यासपत्रिका तिसरी)

तासिका-६०

सत्र दुसरे

कथात्म साहित्य

- | | | |
|------|-------------------------------|--------------------|
| (१) | सरत्या पावसाळ्यांतील एक रात्र | - बी. रघुनाथ |
| (२) | भोमक्या | - अण्णाभारु साठे |
| (३) | अंतःकरणाचे रत्नदीप | - विभावरी शिरूरकर |
| (४) | नदीकाठचा प्रकार | - द.मा.मिरासदार |
| (५) | गांधीजी २००१ | - रंगनाथ पठारे |
| (६) | आपण माणसात जमा नाही | - राजन गवस |
| (७) | हिशोब | - भास्कर चंदनशिव |
| (८) | चोळी | - आबासाहेब वाघमारे |
| (९) | अण्णा | - एल.पी.उगिले |
| (१०) | केशी | - ज्ञा.रा.पंडित |
| (११) | तीन पावलं दान | - कुमार खरात |

डॉ.बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

शैक्षणिक वर्ष जून २०१३ -२०१४ पासून

विषय:मराठी बी.ए.प्रथम वर्ष (ऐच्छिक)

कोड नं. MAR-१०४

अभ्यासपत्रिकेचे नाव : मुद्रित माध्यमासाठी लेखन कौशल्ये

(अभ्यासपत्रिका चौथी)

सत्र दुसरे

तासिका-६०

मुद्रित माध्यमासाठी लेखन कौशल्य

१. वृत्तपत्राचे स्वरूप व महत्त्व
२. बातमी लेखन
३. स्तंभलेखन
४. मुलाखत
५. संवाद लेखन
६. अग्रलेख
७. समीक्षात्मक लेखन
८. जाहिरात लेखन
९. वाचकांची पत्रे
१०. निविदा तयार करणे

संदर्भ ग्रंथ :

- १) उपयोजित मराठी: ल.रा.नसिराबादकर, फडके प्रकाशन, कोल्हापूर
- २) व्यावहारिक मराठी : संपा.स्नेहल तावरे, स्नेहवर्धन प्रकाशन, पुणे
- ३) व्यावहारिक मराठी : ल.रा.नसिराबादकर, फडके प्रकाशन, कोल्हापूर
- ४) उपयोजित मराठी : विद्या बुक्स पब्लिकेशन, औरंगाबाद.
- ५) वस्तुनिष्ठ आकलन आणि उपयोजित मराठी लेखन-प्रा.नरेन्द्र मारवाडे.
- ६) पत्रकारितेची मूलतत्त्वे-प्रभाकर पाध्ये, मेहता पब्लिकेशन, पुणे
- ७) व्यावहारिक मराठी संपा.दत्तात्रय पुंडे, कल्याण काळे, निराली प्रकाशन, पुणे



डॉ.सदाशिव सरकटे

अध्यक्ष-मराठी अभ्यास मंडळ

डॉ.बाबासाहेब आंबेडकर मराठवाडा

विद्यापीठ, औरंगाबाद.

S-[F] NPW-02 June-2013-14 All Syllabus Arts Faculty B.A. Marathi Sem.-I & II OK

- 19 -

डॉ.बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ,औरंगाबाद

बी. ए. / बी. कॉम. / बी. एस्सी./बी.एस.डब्ल्यू.

प्रथम वर्ष मराठी अभ्यासक्रमाकरिता

शैक्षणिक वर्ष जून २०१३-२०१४ पासून

गद्य-पद्य व उपयोजित मराठीसाठी

प्रश्नपत्रिकेचे स्वरूप

वेळ: २.०० तास

प्र.१ ला	दीर्घोत्तरी-गद्य (दोन पैकी एक)	- १५ गुण
प्र.२ रा	दीर्घोत्तरी-पद्य (दोन पैकी एक)	- १५ गुण
प्र.३ रा	लघूत्तरी-गद्य व पद्य (चार पैकी दोन)	- १० गुण
प्र.४ था	उपयोजित विभागावर (दोन पैकी एक)	- १० गुण
	एकूण	- ५० गुण

S-[F] NPW-02 June-2013-14 All Syllabus Arts Faculty B.A. Marathi Sem.-I & II OK

- 20 -

डॉ.बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ,औरंगाबाद

शैक्षणिक वर्ष जून २०१३-२०१४ पासून

विषय:मराठी वी.ए.प्रथम वर्ष (ऐच्छिक)

(अभ्यासपत्रिका क्र.१,२ व ३ साठी प्रश्नपत्रिकेचे स्वरूप) वेळ - २.०० तास

प्र.१ ला	दीर्घात्तरी (दोन पैकी एक)	- १५ गुण
प्र.२ रा	दीर्घात्तरी (दोन पैकी एक)	- १५ गुण
प्र.३ रा	लघूत्तरी (चार पैकी दोन)	- १० गुण
प्र.४ था	टीपा लिहा (चार पैकी दोन)	- १० गुण
	एकूण	- ५० गुण

S-[F] NPW-02 June-2013-14 All Syllabus Arts Faculty B.A. Marathi Sem.-I & II OK

- 21 -

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद

शैक्षणिक वर्ष जून २०१३ -२०१४ पासून

विषय: मराठी बी.ए. प्रथम वर्ष (ऐच्छिक)

अभ्यासपत्रिका चौथी

मुद्रित माध्यमासाठी लेखन कौशल्य वेळ: २.०० तास

प्र.१ ला	दीर्घोत्तरी (दोन पैकी एक)	- १५ गुण
प्र.२ रा	दीर्घोत्तरी (दोन पैकी एक)	- १५ गुण
प्र.३ रा	लघूत्तरी (चार पैकी दोन)	- १० गुण
प्र.४ था	टीपा द्या (चार पैकी दोन)	- १० गुण
	एकूण	- ५० गुण

S-[F] NPW-02 June-2013-14 All Syllabus Arts Faculty B.A. Marathi Sem.-I & II OK

- 22 -

डॉ.बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ,औरंगाबाद

मराठी विषयाच्या अभ्यासक्रमाचा आराखडा

बी.ए./बी.एस.सी./बी.कॉम/बी.एस.डब्ल्यू प्रथम भाषा व बी.ए.प्रथम वर्ष ऐच्छिक

पेपर कोड नं.	पेपर नं.	पेपर शीर्षक	सत्र परीक्षा	सत्र
MAR-००१	अभ्यास पत्रिका पहिली	गद्य-पद्य व उपयोजित मराठी	५०	सत्र पहिले
MAR-००२	अभ्यास पत्रिका दुसरी	गद्य-पद्य व उपयोजित मराठी	५०	सत्र दुसरे
MAR-१०१	अभ्यास पत्रिका पहिली	काव्यात्म साहित्य	५०	सत्र पहिले
MAR-१०२	अभ्यास पत्रिका दुसरी	नाट्यात्म साहित्य	५०	सत्र पहिले
MAR-१०३	अभ्यास पत्रिका तिसरी	कथात्म साहित्य	५०	सत्र दुसरे
MAR-१०४	अभ्यास पत्रिका चौथी	मुद्रित माध्यमासाठी लेखन कौशल्य	५०	सत्र दुसरे

Sarant

Sarant

डॉ.सदाशिव सरकटे

अध्यक्ष-मराठी अभ्यास मंडळ

डॉ.बाबासाहेब आंबेडकर मराठवाडा

विद्यापीठ,औरंगाबाद.

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S*/-150513/-

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S-25 March, 2013 AC after Circulars from Circular No.153 & onwards

- 19 -

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY**CIRCULAR NO.ACAD/NP/Arts/B.A.-Ist Yr./SEM.-I & II/158/2013**

It is hereby notified for information of all concerned that, the syllabus prepared by the Boards of Studies, Ad-hoc Boards & Committee and recommended by the Faculty of Arts, the **Academic Council at its meeting held on 25-03-2013** has accepted the following revised syllabi for **B.A., B.Sc., B.Com., B.F.A. & B.S.W. for First Year as Optional, Second Language under the Faculty of Arts progressively :-**

Sr. No.	Revised Syllabus	
[1]	B.A. [Marathi]	Semester- I & II,
[2]	B.A. [Hindi]	Semester- I & II,
[3]	B.A. [English] [Compulsory, Optional & Second Language]	Semester- I & II,
[4]	B.A. [Urdu and Arabic]	Semester- I & II,
[5]	B.A. [Islamic Studies]	Semester- I & II,
[6]	B.A. [Sanskrit]	Semester- I & II,
[7]	B.A. [Pali & Buddhism]	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/ARTS/IST YEAR/
Sem-I & II/2013/5548-4968
A.C.M.A.I.No.16.

Date:- 08-05-2013.

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(Signature)
13/05
Director,
Board of College and
University Development.

S-25 March, 2013 AC after Circulars from Circular No.153 & onwards

- 20 -

:: [2] ::

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.A. Unit],
- 3] The Superintendent, [B.Sc. Unit],
- 4] The Superintendent, [B.Com. Unit],
- 5] The Superintendent, [Eligibility Unit],
- 6] The Programmer [Computer Unit-1] Examinations,
- 7] The Programmer [Computer Unit-2] Examinations,
- 8] The Director, [E-Suvidha Kendra], in-front of Registrar's Quarter,
Dr. Babasaheb Ambedkar Marathwada University,
- 9] The Public Relation Officer,
- 10] The Record Keeper,
Dr. Babasaheb Ambedkar Marathwada University.

..**..

S*/080513/-

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



**HINDI
Syllabus**

**Second Language for
B.A./B.Com./B.Sc./B.F.A. - Ist Year**

Semester I & II

(Effective from June 2013 Onwards)

MMEB
12-03-2013


B.A./B.Com./B.Sc./B.F.A. -I S.L.
Second Language

Semester - I

Second Language Hindi प्रश्नपत्र 1 सामान्य हिंदी-1

Semester - II

Second Language Hindi प्रश्नपत्र 2 सामान्य हिंदी-2


डॉ. सुकुमार मंडारे
अध्यक्ष
हिंदी पाठ्यक्रम समिति

बी.ए./बी.कॉम./बी.एस.सी./बी.एफ.ए.**प्रथम वर्ष : प्रथम सत्र****द्वितीय भाषा****प्रश्नपत्र 1 : सामान्य हिंदी - 1****➤ उद्देश्य :**

1. संवेदना का विकास
2. भाषा कौशल का विकास

➤ अध्ययन-अध्यापन पद्धति :

1. व्याख्यान
2. दृक-श्रव्य साधनों का प्रयोग
3. स्वाध्याय/परियोजना

➤ पाठ्यक्रम :**अ) कहानी साहित्य :****पाठ्यपुस्तक :**

1. कथा संसार : सम्पादक/समन्वयक : डॉ. माधव सोनटक्के हिंदी पाठ्य समिति वाणी प्रकाशन, नई दिल्ली (पाठ्यक्रम में समाविष्ट कहानियाँ : स्त्री और पुरुष, हार की जीत, दो बाँके, गौरी, एटम बम, पंचलाईट, अपरिचित)

आ) हिंदी भाषा :

1. हिंदी भाषा : उद्भव और विकास : सामान्य परिचय
2. देवनागरी लिपि : स्वरूप एवं विकास
3. हिंदी वर्तनी का मानक रूप
4. पारिभाषिक शब्दावली : स्वरूप और समस्याएँ

➤ संदर्भ ग्रंथ :

1. हिंदी कहानी का विकास : मधुरेश : सुमित प्रकाशन
2. हिंदी कहानी के सौ वर्ष : डॉ.एन.एम. सण्णी, जवाहर पुस्तकालय, आगरा
3. साठोत्तरी हिंदी लेखिकाओं की कहानियों में नारी : डॉ. मंगल कप्पीकेरे : विकास प्रकाशन, कानपुर
4. व्यावहारिक हिंदी : डॉ. माधव सोनटक्के : जयभारती प्रकाशन, इलाहाबाद
5. अच्छी हिंदी : रामचंद्र वर्मा : लोकभारती प्रकाशन, इलाहाबाद
6. व्यावहारिक हिंदी व्याकरण : हरदेव बाहरी : लोकभारती प्रकाशन, इलाहाबाद
7. हिंदी व्याकरण : व्योमेशचंद्र शुक्ल : वाणी प्रकाशन, दिल्ली

बी.ए./बी.कॉम./बी.एस.सी./बी.एफ.ए.

प्रथम वर्ष : द्वितीय सत्र

द्वितीय भाषा

प्रश्नपत्र 2 : सामान्य हिंदी - 2

➤ **उद्देश्य :**

1. संवेदना का विकास
2. भाषा कौशल का विकास

➤ **अध्ययन-अध्यापन पद्धति :**

1. व्याख्यान
2. दृक-श्रव्य साधनों का प्रयोग
3. स्वाध्याय/परियोजना

➤ **पाठ्यक्रम :**

अ) कहानी साहित्य :

1. कथा संसार : सम्पादक/समन्वयक : डॉ. माधव सोनटक्के हिंदी पाठ्य समिति, वाणी प्रकाशन, नई दिल्ली

(पाठ्यक्रम में समाविष्ट कहानियाँ : घर की तलाश, कसबे का आदमी, पोस्टमैन, छुट्टी का दिन, गुमशुदा की तलाश, दूज का टीका, मैं, शहर और वे)

आ) व्यावहारिक हिंदी:

1. व्यावहारिक लेखन : संक्षेपण, पल्लवन
2. पत्राचार : निजी, सामाजिक, सरकारी, अर्द्धसरकारी
3. कम्प्यूटर में हिंदी का प्रयोग
4. अनुवाद : स्वरूप और भेद

➤ **संदर्भ ग्रंथ :**

1. व्यावहारिक हिंदी : डॉ. माधव सोनटक्के, जयभारती प्रकाशन, इलाहाबाद
2. हिंदी कहानी : परंपरा और प्रगति : हरदयाल, वाणी प्रकाशन, नई दिल्ली
3. कहानी : स्वरूप और संवेदना : राजेन्द्र यादव, वाणी प्रकाशन, नई दिल्ली
4. प्रयोजनमूलक तथा व्यावहारिक हिंदी : डॉ. सुकुमार भंडारे, विकास प्रकाशन, कानपुर
5. व्यावहारिक हिंदी व्याकरण : हरदेव बाहरी, लोकभारती प्रकाशन, इलाहाबाद
6. हिंदी व्याकरण : व्योमेशचंद्र शुक्ल, वाणी प्रकाशन, नई दिल्ली
7. मानक हिंदी व्याकरण : पृथ्वीनाथ पाण्डे, जयभारती प्रकाशन, इलाहाबाद

अंक विभाजन तथा प्रश्नपत्र का प्रारूप

प्रथम सत्र

प्रश्नपत्र 1 द्वितीय भाषा : सामान्य हिंदी

समय 2 घण्टे

कुल अंक : 50

अंक

- | | | |
|----|--|----|
| 1) | 'कथा संसार' की रचनाओं से विकल्प सहित ससंदर्भ व्याख्या | 10 |
| 2) | 'कथा संसार' की रचनाओं पर विकल्पसहित दीर्घोत्तरी प्रश्न | 15 |
| 3) | हिंदी भाषा पर विकल्पसहित दीर्घोत्तरी प्रश्न | 15 |
| 4) | टिप्पणी | 10 |
| | अ) हिंदी भाषा के पाठ्यक्रम पर विकल्पसहित | |
| | आ) 'कथा संसार' की रचनाओं पर विकल्पसहित | |

अंक विभाजन तथा प्रश्नपत्र का प्रारूप

द्वितीय सत्र

प्रश्नपत्र 2 : द्वितीय भाषा : सामान्य हिंदी -2

समय 2 घण्टे

कुल अंक : 50

अंक

- | | | |
|----|--|----|
| 1) | 'कथा संसार' की कहानियों से विकल्प सहित ससंदर्भ व्याख्या | 10 |
| 2) | 'कथा संसार' की कहानियों विकल्पसहित पर दीर्घोत्तरी प्रश्न | 15 |
| 3) | व्यावहारिक हिंदी के पाठ्यक्रम पर विकल्पसहित दीर्घोत्तरी प्रश्न | 15 |
| 4) | टिप्पणी | 10 |
| | अ) 'कथा संसार' की कहानियों पर विकल्पसहित | |
| | आ) व्यावहारिक हिंदी के पाठ्यक्रम पर विकल्पसहित | |

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



**Syllabus
Optional Hindi for
B.A. - Ist Year
Semester I & II**

(Effective from June 2013 Onwards)

M. S. B. S.
12.03.2013.

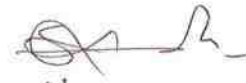
B.A. - I Optional - Hindi

Semester - I

प्रश्नपत्र 1	उपन्यास साहित्य
प्रश्नपत्र 2	नाटक साहित्य

Semester - II

प्रश्नपत्र 3	हिंदी गद्य साहित्य
प्रश्नपत्र 4	एकांकी साहित्य


डॉ. सुकुमार अंसारे
अध्यक्ष
हिंदी पाठ्यक्रम समिति

बी.ए. प्रथम वर्ष
ऐच्छिक हिंदी : प्रथम सत्र
प्रश्नपत्र 1: उपन्यास साहित्य

➤ **उद्देश्य :**

1. सामान्य आस्वादन और अभिरूचि का परिसंस्कार
2. जीवन मूल्यों के प्रति आस्था
3. उपन्यास साहित्य का अध्ययन
4. लेखन तथा भाषण कौशल का विकास

➤ **अध्ययन-अध्यापन पद्धति :**

1. व्याख्यान
2. दृक-श्रव्य साधनों का प्रयोग
3. कार्यशाला
4. परियोजना

➤ **पाठ्यपुस्तकें :**

1. अमिता : यशपाल : लोकभारती प्रकाशन, इलाहाबाद
2. आपका बंटी : मन्नू भंडारी : राधाकृष्ण प्रकाशन, दिल्ली

➤ **पाठ्यांश :**

1. हिंदी उपन्यास : स्वरूप एवं विकास
2. 'अमिता' उपन्यास का संवेदनागत अध्ययन
3. 'अमिता' उपन्यास का शिल्पगत अध्ययन
4. 'आपका बंटी' उपन्यास का संवेदनागत अध्ययन
5. 'आपका बंटी' उपन्यास का शिल्पगत अध्ययन

➤ **संदर्भ ग्रंथ :**

1. यशपाल के उपन्यास : समस्यामूलक अध्ययन : डॉ. सीलम व्यंकटेश राव : सीलम प्रकाशन, नामपल्ली हैदराबाद - 01
2. यशपाल का उपन्यास साहित्य : डॉ. सरोज बजाज, ऋषभचरण जैन

3. इतिहास और कल्पना का सुंदर समन्वय : अमिता : डॉ. बी.आर. धापसे, अभय प्रकाश, कानपुर 208021
4. मन्नू भंडारी की कथा यात्रा : संपादक - डॉ. किशोरसिंह तथा डॉ. मीरा सक्सेना : ज्ञान प्रकाशन, कानपुर
5. मन्नू भंडारी का रचना संसार : डॉ. मीना ईप्पन, जवाहर पुस्तकालय, सदर बाजार मथुरा, उत्तरप्रदेश
6. हिंदी के समकालीन उपन्यासों में राजनीतिक चेतना : डॉ. सुकुमार भंडारे, विकास प्रकाशन, कानपुर
7. हिंदी के चर्चित उपन्यासकार : डॉ. भगवतीचरण मिश्र, राजपाल अँड सन्स, कश्मीरी गेट, दिल्ली - 06

बी.ए. प्रथम वर्ष

ऐच्छिक हिंदी : प्रथम सत्र

प्रश्नपत्र 2 : नाटक साहित्य

➤ उद्देश्य :

1. हिंदी नाटक तथा रंगमंच का अध्ययन
2. संवेदना का विकास
3. नाट्यास्वादन तथा नाट्यालोचन क्षमता का विकास

➤ अध्ययन-अध्यापन पद्धति :

1. व्याख्यान
2. दृक-श्रव्य साधनों का प्रयोग
3. नाट्य पठन और प्रस्तुति
4. नाट्यालोचन का अभ्यास

➤ पाठ्यपुस्तकें :

1. विजय पर्व : डॉ. रामकुमार वर्मा, लोकभारती प्रकाशन, इलाहाबाद
2. होरी : प्रेमचंद : नाट्य रूपांतर : विष्णू प्रभाकर, राजपाल प्रकाशन, कश्मीरी गेट दिल्ली
3. अलख आजादी की : सुशीलकुमार सिंह, वाणी प्रकाशन, नई दिल्ली

➤ **पाठ्यांश :**

1. 'विजय पर्व' नाटक का संवेदनागत अध्ययन
2. 'विजय पर्व' का शिल्पगत अध्ययन
3. 'होरी' नाटक का संवेदनागत अध्ययन
4. 'होरी' नाटक का शिल्प तथा रूपांतरण पक्ष का अध्ययन
5. 'अलख आजादी' नाटक का संवेदनागत अध्ययन
6. 'अलख आजादी' नाटक का शिल्पगत अध्ययन

➤ **संदर्भ ग्रंथ :**

1. समकालीन संवेदना और हिंदी नाटक : शेखर वर्मा, विकास प्रकाशन, कानपुर
2. बीसवीं सदी का हिंदी नाटक और रंगमंच : डॉ. गिरीश रस्तोगी, ज्ञानपीठ प्रकाशन, नई दिल्ली
3. समकालीन रंगधर्मी नाटककार : लवकुमार लवलीन, विकास प्रकाशन, कानपुर
4. हिंदी नाटक : आज तक : डॉ. वीणा गौतम, शब्द सेतु प्रकाशन, नई दिल्ली
5. प्रसादोत्तर हिंदी नाटक : डॉ. नवनीत चौहान, आस्थाना प्रकाशन, भोपाल
6. नाटककार रामकुमार वर्मा : डॉ. कमल सुर्यवंशी, वाणी प्रकाशन, नई दिल्ली

बी.ए. प्रथम वर्ष

ऐच्छिक हिंदी : द्वितीय सत्र

प्रश्नपत्र 3 : हिंदी गद्य साहित्य

➤ **उद्देश्य :**

1. कहानी तथा व्यंग्य का अध्ययन
2. संवेदना का विकास
3. साहित्य आस्वादन तथा मूल्यांकन क्षमता का विकास

➤ **अध्ययन-अध्यापन पद्धति :**

1. व्याख्यान
2. दृक-श्रव्य साधनों का प्रयोग
3. स्वाध्याय/परियोजना

➤ पाठ्यपुस्तकें :

1. कथा यात्रा : संपादक/समन्वयक : डॉ. माधव सोनटक्के, हिंदी पाठ्य समिति, वाणी प्रकाशन, नई दिल्ली
2. काग भगोडा : हरिशंकर परसाई, वाणी प्रकाशन, नई दिल्ली
(पाठ्यक्रम में समाविष्ट व्यंग्य : इंटरव्यूह, मोफतलाल का होना डिप्टी कलक्टर, एक तृप्त आदमी, अनशकारी, एक दीक्षांत भाषण, रामसिंह की ट्रेनिंग, चमचे की दिल्ली यात्रा, विज्ञापन में बिकती नारी, सदाचार का ताबिज)

➤ पाठ्यांश :

1. कहानी : स्वरूप एवं विकास
2. 'कथा यात्रा' की कहानियों का संवेदना तथा शिल्पगत अध्ययन
3. व्यंग्य : स्वरूप एवं विकास
4. 'काग भगोडा' के व्यंग्यों का कथ्य और शिल्पगत अध्ययन

➤ संदर्भ ग्रंथ :

1. हरिशंकर परसाई : व्यक्तित्व और कृतित्व : मनोहर देवलिया, साहित्य वाणी प्रकाशन, इलाहाबाद
2. हरिशंकर परसाई के व्यंग्यों में वर्ग चेतना : डॉ. आभा भट्ट, जयभारती प्रकाशन, इलाहाबाद
3. हिंदी कहानी के सौ वर्ष : डॉ. एन.एम. सण्णी/ डॉ. अन्ना सालन, जवाहर पुस्तकालय, मथुरा
4. महिला रचनाकारों की कहानियों में जीवनमूल्य : भारती शेलके, विकास प्रकाशन, कानपुर

बी.ए. प्रथम वर्ष
ऐच्छिक हिंदी : द्वितीय सत्र
प्रश्नपत्र 4 : एकांकी साहित्य

➤ **उद्देश्य :**

1. हिंदी नाटकों के नये भेदों का अध्ययन
2. संवेदना का विकास
3. नाट्यास्वादन तथा नाट्यालोचन क्षमता का विकास

➤ **अध्ययन-अध्यापन पद्धति :**

1. व्याख्यान
2. दृक-श्रव्य साधनों का प्रयोग
3. एकांकी पठन तथा मंचन
4. नाट्यालोचन का अभ्यास

➤ **पाठ्यपुस्तकें :**

1. एकांकी नये पुराने : संपादक - श्रीमती मायासिंह, जयभारती प्रकाशन, इलाहाबाद (मीना कहाँ है तथा रास्ता बंद है छोड़कर शेष एकांकी)
2. प्रतिनिधि महिला एकांकी : संपादक - डॉ. माधव सोनटक्के, लोकभारती प्रकाशन, इलाहाबाद (मादा मिट्टी को छोड़कर शेष एकांकी)

➤ **पाठ्यांश :**

1. एकांकी : स्वरूप एवं भेद
2. हिंदी एकांकी : विकास
3. एकांकी नये पुराने के एकांकी का कथ्य एवं शिल्पगत अध्ययन
4. प्रतिनिधि महिला एकांकी के एकांकी का कथ्य एवं शिल्पगत अध्ययन

➤ **संदर्भ ग्रंथ :**

1. एकांकी और एकांकीकार : रामचरण महेंद्र, वाणी प्रकाशन, नई दिल्ली
2. रेडिओ नाटक की कला : सिद्धनाथ कुमार, राधाकृष्ण प्रकाशन, नई दिल्ली
3. साहित्य मनोविज्ञान और हिंदी एकांकी : गुरुदयाल बजाज राधाकृष्ण प्रकाशन, नई दिल्ली
4. हिंदी एकांकी का रंगमंचीय अनुशीलन : भुवनेश्वर महतो, अन्नपूर्णा प्रकाशन, कानपुर
5. हिंदी एकांकियों में सामाजिक जीवन की अभिव्यक्ति : म.के. गाडगील, पुस्तक संस्थान, कानपुर
6. हिंदी नाट्य साहित्य में महिला रचनाकारों का योगदान : डॉ. दीपा कुचेकर, विकास प्रकाशन, कानपुर

अंक विभाजन तथा प्रश्नपत्र का प्रारूप

प्रथम सत्र

प्रश्नपत्र 1 : उपन्यास साहित्य

समय 1 घण्टे	कुल अंक : 50
	अंक
1) उपन्यासों पर विकल्प सहित ससंदर्भ व्याख्या	10
2) 'अमिता' पर विकल्पसहित दीर्घोत्तरी प्रश्न	15
3) 'आपका बंटी' पर विकल्पसहित दीर्घोत्तरी प्रश्न	15
4) टिप्पणी	10
अ) 'अमिता' पर विकल्पसहित	
आ) 'आपका बंटी' पर विकल्पसहित	

अंक विभाजन तथा प्रश्नपत्र का प्रारूप

प्रथम सत्र

प्रश्नपत्र 2 : नाटक साहित्य

समय 1 घण्टे	कुल अंक : 50
	अंक
1) नाटकों पर विकल्प सहित ससंदर्भ व्याख्या	10
2) 'विजय पर्व' पर विकल्पसहित दीर्घोत्तरी प्रश्न	15
3) 'होरी/अलख आजादी की' पर विकल्पसहित दीर्घोत्तरी प्रश्न	15
4) टिप्पणी	10
अ) 'होरी' पर विकल्पसहित	
आ) 'अलख आजादी की' पर विकल्पसहित	

अंक विभाजन तथा प्रश्नपत्र का प्रारूप

द्वितीय सत्र

प्रश्नपत्र 3 : हिंदी गद्य साहित्य

समय 1 घण्टे

कुल अंक : 50

अंक

- | | | |
|----|---|----|
| 1) | कथा यात्रा/काग भगोडा से विकल्पसहित ससंदर्भ व्याख्या | 10 |
| 2) | कथा यात्रा पर विकल्पसहित दीर्घोत्तरी प्रश्न | 15 |
| 3) | 'काग भगोडा' पर विकल्पसहित दीर्घोत्तरी प्रश्न | 15 |
| 4) | टिप्पणी | 10 |
| | अ) कथा यात्रा पर विकल्पसहित | |
| | आ) काग भगोडा पर विकल्पसहित | |

अंक विभाजन तथा प्रश्नपत्र का प्रारूप

द्वितीय सत्र

प्रश्नपत्र 4 : एकांकी साहित्य

समय 1 घण्टे

कुल अंक : 50

अंक

- | | | |
|----|---|----|
| 1) | एकांकी नये पुराने/प्रतिनिधि महिला एकांकी से विकल्पसहित ससंदर्भ व्याख्या | 10 |
| 2) | एकांकी नये पुराने पर विकल्पसहित दीर्घोत्तरी प्रश्न | 15 |
| 3) | प्रतिनिधि महिला एकांकी पर विकल्पसहित दीर्घोत्तरी प्रश्न | 15 |
| 4) | टिप्पणी | 10 |
| | अ) एकांकी नये-पुराने पर विकल्पसहित | |
| | आ) प्रतिनिधि महिला एकांकी पर विकल्पसहित | |