NEP SYLLABUS

FOR

SEMESTER-I

IN

B.Sc. APPLIED SCIENCE (Home-science)

GONDWANA UNIVERSITY

GADCHIROLI (M.S.)

(Mr. N.M. Ghatbandhe)

(Dr. A. N. Shende)

(Dr Nandkishor N. Padole)

Gondwana University, Gadchiroli
NEP 2020 U.G. PROGRAMME SESSION 2024-25
Faculty of Science and Technology
Programme Name - B.Sc. Applied Science (Home-Science) SEM- I

Sr. No.	Course Category	Subject name		Total Credit	Teaching Scheme (Hrs)			Examination Scheme									Total Marks
								Theory					Practical				
					Theory	Practical	Total Hrs.	UA	CA	Total Mark	Min. Passing	Duration of Exam (Hrs.)	UA	CA	Total Mark	Min. Passing	
1	Gr Subject	Select any Two core group subject from Annesure -1	Subject-I (Applied science) 1) Basic chemistry OR 2)Basic biology OR 3) Basic physics	02	02	--	02	40	10	50	20	02	--	--	--	--	50
			ii) Subject II- Major Subject from Home Science	02	02	--	02	40	10	50	20	02	--	--	--	--	50
			iii) Practical Based on Subject –I	02	--	04	04	--	--	--	--	--	30	20	50	25	50
			iv) Practical Based on Subject –II	02	--	04	04	--	--	--	--	--	30	20	50	25	50
2	OE	Group-A (Any one from Annexure –II)		02	02	--	02	40	10	50	20	02	--	--	--	--	50
3	VSC	Practical skill related to Applied science (Annexure-III)		02	--	04	04	--	--	--	--	--	30	20	50	25	50
4	SEC	Any one from (Annexure IV)		02	02	--	02	40	10	50	20	02	--	--	--	--	50
5	VEC	Audit Course (Any one from Annexure –V)		02	02	--	02	--	50	50	20	--	--	--	--	--	50

6	**AEC**	**English/Marathi/Hindi/Bengali/Pali**	**02**	**02**	**--**	**02**	**40**	**10**	**50**	**20**	**02**	**--**	**--**	**--**	**--**	**50**
7	**IKS**	**Generic IKS**	**02**	**02**	**--**	**02**	**40**	**10**	**50**	**20**	**02**	**--**	**--**	**--**	**--**	**50**
8	**CC**	**NCC/NSS/Yoga/Sports**	**02**	**--**	**04**	**04**	**--**	**--**	**--**	**--**	**--**	**--**	**50**	**50**	**25**	**50**
Total			**22**	**14**	**16**	**30**	**240**	**110**	**350**	**140**	**12**	**90**	**110**	**200**	**100**	**550**

Abbreviations:
OE : Generic/ Open Electives
SEC: Skill Enhancement Courses **AEC:** Ability Enhancement Courses:
IKS: Indian Knowledge System **VEC:** Value Education Courses
VSEC/VSC: Vocational Skill and Skill Enhancement Courses

Note(s):

1)Student shall opt any one subject out of three from core group-I
2) As per open elective (OE)is concerned, students shall opt one subject from Group-A
3) Generic IKS will be common for all Faculties in the first Semester as per Government letter No. Ø- ,ubZih-2022@iz-Ø-09@fof'k&3¼f'kdkuk½ fnukad 25 tkusokjh] 2024-
4) VSC Shall be based on Group Subject.

B.Sc. Applied Science Semester-I
Core Subject- (Credit-2+2)
1. Basic Chemistry

Objective:

To know basic concept of acid and base
To learn about alloy and their application
To learn uses and chemical properties of different organic compound

Total Marks	100
Theory	40
IA	10
Practical's	50

Unit-I

a) Acid and base: Concept of acid, base and salt, (Arrhenius theory and Lowry and Bronsted Theory), Conjugate pair, neutralization reaction.

b) Definition of pH, pOH and pH scale, (Numerical on pH scale) Buffer solution and its applications in everyday life.

Unit-II

a) Organic Compounds: Definition, saturated and unsaturated hydrocarbon, classification of organic compounds based on their functional groups. Definition of alkane, alkene and alkyne with examples.

b) Homologous series, IUPAC nomenclature of alkane, Laboratory preparation, chemical properties and uses of methane and ethylene.

Unit-III

(a) Alloy: Definition, Classification of alloy (ferrous and Non-ferrous), purpose of making an Alloy with examples.

(b) Composition, Properties and Application of stainless steel, brass, Bronze, Alnico and Duralumin.

Practical A

1. Titration of strong acid vs strong base (Acid-base double titration)
2. Determination of pH of different solutions by using pH meter/ pH paper.
3. Standardization of KMnO4 solution using standard oxalic acid
4. Determination of the percentage of iron present in given sample by KMnO4solution.
5. Determination of percentage of copper in given sample
6.Estimation of hydrochloric acid using sodium carbonate.
7. Estimation of Mohr's salt by dichrometry.

INTERNAL ASSESSMENT:

The internal assessment marks shall be awarded on the basis of assignments like class test, attendance, project assignments, seminar, study tour, industrial visits, field work, visits to educational and research organizations or any other innovative practice/ activity.

BOOK RECOMMENDED:

1. Text-Book of organic Chemistry: B; S. Bahl and G.D. Tuli, S. Chand Publication, New Delhi.
2. Text Book of Physical Chemistry: B.S. Bahl and G.D. Tuli, S. Chand Publication, New Delhi.
3. A Text Book of Engineering Chemistry, S.S. Dara and Suresh Umare, S. Chand Publication, New Delhi.
4. A Text Book of Basic and Applied Chemistry, P.C. Jain and Monica Jain.
5. Polymer Science by V.R. Gowarikar, Wiley Ester Ltd. 1987.
6. Text Book of Organic Chemistry by J. L. Finar, Longman Publication.

B.Sc. Applied Science Semester-I
Core Subject (Credit-2+2)
2.Basic Biology

Total Marks	**100**
Theory	**40**
IA	**10**
Practical's	**50**

Objective:

1. To develop a knowledge about nature of life.
2. To develop a knowledge about horticultureand condiments and spices.

Unit I: -Cytology: cell structure and function: - cell cycle and celldivision.
Mendel's Laws: -Dihybrid cross, Low of segregation, dominant, recessive, mutation & types of mutation, cytoplasmic inheritances.

Unit II: - Plant breading:- Tissue culture, concept of cellular totipotency, callus culture, hydroponics methods.
Horticulture: -Layout of kitchen garden, its parts, importance and cultivation of potato, Brinjal, Tomato, lady's finger. Layout of ornamental garden, its parts, importance and cultivation of marigold, rose. Nursery development: - Plant propagation, Budding, grafting, layering, Economics importance of horticulture.

UNIT III: -Condiments &Spices: -Introduction, Morphology, cultivation & their importance of *Cuminumcyminum*(Jeera) , *Foeniculum vulgare* (Saunf), *Curcuma longa* (Haldi), *Carumcopticum*(Ajwain), *Ferulaasafoetida* (Heeng) , Capsicum annum (Mirch) *Cinnamomumzeylanicum*(Dalchini) , *Cinnamomumtamala* (TejPatta) etc.Economic importance of spices and Geographical distribution of spices in India.
Definition of Medicinal plants & uses of Medicinal plants, Economic importance of Medicinal plants.

Practical:
1.To explain the different stages of mitosis/meiosis
2. To study the dihybrid cross of *Pisum sativum.*
3. To study the dominant and recessive Allels.
4. To explain the low of segregation.
5. Study and identification of vegetables, local flowers and their seeds.
6.Visit to Garden - Ornamental and Kitchen.
7. To identification and comment upon the given spices.
8.Project/ Seminars Presentations/ Herbarium.

References / Books Recommended

1. Plant Biology -Dr. P S Verma and Dr. V. K. Agrawal – S Chand Publication
2. Life Science - Dr. P S Verma-S Chand Publication
3. Plant breeding- Dr. Anil Kumar Chaudhary & Dr. R. C. Chaudhary- RS. Scientific Publication.
4. Fundamentals of horticulture- prof. Triloki Nath & DR. L.P. Yadav
5. Vanaspati Vigyan 0 P Singh & A K Singh , Sanjay Publication Agra
6. Vanasptividyan -Dr. O. P. Singh and Dr. A. N. Shende -Ram prasad publication.
7. Plant Propogation - M. K. Sadhu
8. Experimental botany- OP Singh & AN Shende- Ramprasad Publication.
9. Text Book of Entomology - Dr. D. B. Tembhare.

B.Sc. Applied Science Semester-I
Core Subject(Credit-2+2)
3. Basic physics

Total Marks	**100**
Theory	**40**
IA	**10**
Practical's	**50**

COURSE OBJECTIVES: At the end of course, students will able to

1. Understand basic unit of various physical quantities and measurement devices.
2. Enable the students to get knowledge on electricity and electrical safety devices.
3. Impart knowledge on the basics of semiconductor.
4. Inculcate an idea of significance of nano materials properties, synthesis method.
5. Develop the ability to apply concepts of Nanomaterials and computer to understanding various applications.

UNIT:I UNITS, DIMENSION AND MEASUREMENT

Unit, Physical Quantities: Fundamental and Derived Quantities and their units with dimension, Systems of units: CGS, MKS and SI, Scalar and Vector Physical Quantities. Causes of Errors in Measurement, Applications of Vernier callipers, Screw gauge.

UNIT-II: ELECTRICITY AND SAFETY DEVICES

Concept of charge, Coulomb's inverse square law, Electric field, Electric field intensity, potential and potential difference, Concept of current, voltage, resistance, capacitor, Inductor, Transformer, Ohm's Law, Conductors and Insulators of electricity and their applications, Household wiring- safety features- fuse, MCB and earthing,Lightning conductor.

UNIT-III: SEMICONDUCTOR PHYSICS

Formation of energy bands in solid, classification of material on the basis of energy band, Intrinsic Semiconductors – Carrier concentration in intrinsic semiconductors – extrinsic semiconductors - Carrier concentration in N-type & P-type semiconductor, P-N junction diode, Forward biasing, Reverse Biasing and various types of diode.

INTERNAL ASSESSMENT (Refer Direction)

Practical's (Any 10 to be performed)

1. ToidentifyandstudydifferentcomponentsinPhysicsLab.
2. Todetermine inner and outer diameterofacylinder usingVernierCallipers.
3. To determinethickness ofa smallobject UsingScrew Gauge.
4. ComparisonofmeasurementswithScale,VernierCallipersandScrewGauge.
5. To study and verifyohms law.
6. To study and verify V-I characteristics ofP-N junction diode.
7. Todeterminethevalueofresistorfrom given colourcode.
8. Tostudy Transformer.
9. To fill data in table format using MS word document, Save it and printthe file in landscape mode.

10. Use of various commands effects in MS word typed documents.
11. Visit to related industry/Manufacturing Unit/Electrical repair unit.
12. To study and identify a various types of diode in physics laboratory.

Text Books:

1. Engg. Physics by Avadhanulu&Kshirsagar S. Chand Prakashan.
2. ATextbookofEngg.Physics, N. N.PadoleandS. A.Pawade, DNA Publication,Nagpur 2021
3. A textbook on Physics for B.Sc (Home Science) by N. N.Padole-2023
4. Experimental Physics by N. N. Padole, P.K.Singh, L. Shaniware, Ram Prasad Publication, Agra
5. "Nanotechnology: Principles and Practices" by Sulabha K. Kulkarni

Reference Books:

1. Physics- Unit and Dimension: Master Book for Physics by T. M. Kishan.
2. Fundamentals of Physics by David Halliday, Robert Resnik AndJerle Walker John Wiley &Sons 2002.
3. Fundamentals of Nanotechnology by N. N. Padole, Lap Lambert Academic Publishing 2022.
4. Electronic Engineering Material & Devices by John Allison (TMH)
5. Applied Physics by P.K. Mittal, I.K. International.
6. Applied Physics by K. C. Nandi, Tech. Max. Pune.
7. ElementsofComputerScience,S.K.Sarkar, A.K.Gupta,S.Chand&Co.,NewDelhi.
8. FundamentalofcomputersE. Balguruswamy,McGrawHillEducationPvt.Ltd.NewDelhi.
9. Computerfundamental(concepts,system&application)PradeepK.Sinha,PritiSinha,Sixthedition2011, B.P.B. Publication.
10. ExperimentsinEngineeringPhysicsbyAvadhanulu,S.ChandPublications,NewDelhi.

B.Sc. Applied Science Semester-I

VSC (Credit: 2)

1. Chemistry practical skill

Total Marks	**50**
UA	**30**
CA	**20**

Practical

1) Detection of presence of carbohydrates in the given sample

2) Detection of presence of Fat and oils in the given sample

3) Detection of presence of proteins in the given sample

4) Estimation of glucose in given sample.

5) Estimation of fat content in given sample.

6) Estimation of lactose in given sample.

7) Estimation of ascorbic acid content in given sample.

8) To determine acetic acid in commercially vinegar using NaOH.

9) To estimate zinc by complexometric titration with EDTA.

B.Sc. Applied Science Semester-I

VSC (Credit: 2)

2. NURSERY, GARDENING AND LANDSCAPING

Total Marks	**50**
UA	**30**
CA	**20**

1. Introduction to Gardening, Garden Implements, and Accessories, Area, Measurements, Volumes, Layout - Planning, Different Designs; Containers - Earthen containers, pots, polybags, cement pots, ceramic pots; Propagation - Seeds, cuttings, layering, budding, and grafting

2. Features of Gardens - Gate, lawn, shrubbery, flower beds, borders, paths, hedges, edges, steps, statues, fountains, bird paths, streams, pools, waterfalls, rockery, arches, pergolas, hanging pots, bird paths, tea house.; Principles and Practices of landscape design for home gardens and public parks.; Ornamental Gardening - Scope; importance; nursery management; lawns, layout of lawn, grasses; lawn and its maintenance.

3. Design and layout of gardens for homes, schools, colleges, public buildings, parks, villages, and kitchen gardens.Green Houses-shade houses, uses application in horticulture. Pruning and training - objective and methods. Principles of making bonsai.

Laboratory Exercises:

1. Study of Garden tools and equipment.
2. Study of containers - earthen containers, pots, poly bags, cement pots and ceramic pots.
3. Preparation of nursery beds and sowing of seeds.
4. Layout of land for lawn.
5. Preparation of land for lawn.
6. Designing of home gardens
7. Planting of woody plants, bulbs and bedding plants.
8. Planting of shrubbery, hedges and edges.
9. Identification and growing of indoor plants of their basic requirements.
10. Practice in making bonsai.
11. Raising of root stocks for grafting and budding.
12. Propagation of plants through cuttings.
13. Practicing of layering and stooling (Guava)
14. Practicing of grafting (Mango)
15. Practicing budding in rose / citrus.
16. Visit to commercial nursery in the locality.
17. Preparation of potting mixture, potting and repotting.
18. Study or ring basin method in mango / citrus orchard.
19. Study of check basin method in vegetables.

20. Study of sprinkler irrigation method.
21. Study of drip irrigation method.
22. Layout of model kitchen garden.
23. Planning and designing of different of gardens

Suggested Readings:

1. Complete Gardening India - K.S.s Gopalaswamiengar
2. Gardening in India - Bose T. K. and Mukherjee
3. Design Elements of Landscape Gardening - Nambisan K.M.P.
4. Text-Book of Horticulture - Rao K. M.
5. Fruits-topical and sub-tropical - Bose, T.K. and Mitra, S. K.
6. Vegetables - Chaudhary, B.
7. Floriculture in India - Randhawa, G.S. &Mukhopadhay. A.

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B.Sc. Applied Science Semester-I

VSC (Credit: 2)

Measurement Techniques in Physics Lab

Total Marks	**50**
UA	**30**
CA	**20**

List of Experiments (Minimum 10 to be performed)

1. To identify and study various measuring devices in Physics Laboratory.
2. To determine diameter of given wire using screw gauge.
3. To determine inner and outer diameter of cylindrical body.
4. To determine the value of various resistor using colour code.
5. Use of ammeter and voltmeters of different ranges for measurement of Current and Voltage.
6. To verify the value of various resistor using Digital Multimeter.
7. To study different types of capacitors.
8. To study meter bridge/Potentiometer.
9. To study step down/Step up Transformer
10. To study P-N junction diode.
11. To study Ohm's Law
12. To study windows operating system.
13. To study MS word and apply various commands.
14. To study MS Excel and apply various formulae for calculation.
15. To prepare Power Point and adding animation effects.

Reference Books:

1. ExperimentsinEngineeringPhysics byAvadhanulu,S.Chand Publications,NewDelhi.
2. AText bookof EngineeringPhysics, N. N.PadoleandS. A.Pawade, DNAPublication,Nagpur.
3. Comdexcomputercourse,VikasGupta,PMPublication, NewDelhi.
4. C…..C….Computercha: by Ravindra Desai, Rajhans Publication, Pune.
5. Experimental Physics by N. N. Padole, Ram Prasad Publication Agra.
6. NavyaSwaroopat Excel: by Ravindra Desai, Rajhans Publication, Pune.

NEP SYLLABUS

FOR

SEMESTER-II

IN

B.Sc. APPLIED SCIENCE (Home-Science)

GONDWANA UNIVERSITY

GADCHIROLI (M.S.)

Gondwana University, Gadchiroli
NEP 2020 U.G. PROGRAMME SESSION 2024-25
Faculty of Science and Technology
Programme Name - B.Sc. Applied Science (Home-Science) SEM- II

Sr. No.	Course Category	Subject name		Total Credit	Teaching Scheme (Hrs)			Examination Scheme									Total Marks
								Theory					Practical				
					Theory	Practical	Total Hrs.	UA	CA	Total Mark	Min. Passing	Duration of Exam (Hrs.)	UA	CA	Total Mark	Min. Passing	
1	Gr Subject	Select any Two core group subject from Annexure-VII	Subject-I (Applied science) 1) Basic chemistry OR 2)Basic biology OR 3) Basic physics	02	02	--	02	40	10	50	20	02	--	--	--	--	50
			ii) Subject II- Major Subject Home Science	02	02	--	02	40	10	50	20	02	--	--	--	--	50
			iii) Practical Based on Subject –I	02	--	04	04	--	--	--	--	--	30	20	50	25	50
			iv) Practical Based on Subject –II	02	--	04	04	--	--	--	--	--	30	20	50	25	50
2	OE	Group-A (Any one from Annexure –VIII)		02	02	--	02	40	10	50	20	02	--	--	--	--	50
		Group-B A (Any one from Annexure –VIII)		02	02	--	02	40	10	50	20	02	--	--	--	--	50
3	VSC	Practical skill related Applied science (Annexure-IX)		02	--	04	04	--	--	--	--	--	30	20	50	25	50

4	**SEC**	**Any one from (Annexure X)**	**02**	**02**	**--**	**02**	**40**	**10**	**50**	**20**	**02**	**--**	**--**	**--**	**--**	**50**
5	**VEC**	**Audit Course (Any one from Annexure –XI)**	**02**	**02**	**--**	**02**	**--**	**50**	**50**	**20**	**--**	**--**	**--**	**--**	**--**	**50**
6	**AEC**	**English/Marathi/Hindi/Bengali/Pali/ Supplementary English (Annexure XII)**	**02**	**02**	**--**	**02**	**40**	**10**	**50**	**20**	**02**	**--**	**--**	**--**	**--**	**50**
8	**CC**	**NCC/NSS/Yoga/Sports**	**02**	**--**	**04**	**04**	**--**	**--**	**--**	**--**	**--**	**--**	**50**	**50**	**25**	**50**
Total			**22**	**14**	**16**	**30**	**240**	**110**	**350**	**140**	**12**	**90**	**110**	**200**	**100**	**550**

Abbreviations:
OE : Generic/ Open Electives
SEC: Skill Enhancement Courses **AEC:** Ability Enhancement Courses:
IKS: Indian Knowledge System **VEC:** Value Education Courses
VSEC/VSC: Vocational Skill and Skill Enhancement Courses

Note(s):

1)Student shall opt any one subject out of three from core group-I (Other than Semester-I)
2) As per open elective (OE)is concerned, students shall opt one subject from Group-A and group B
3)VSC Shall be based on Group Subject.

B.Sc. Applied Science Semester-II
Core Subject (Credit-2+2)
1. Basic Chemistry

Objective:

Total Marks	**100**
Theory	**40**
IA	**10**
Practical's	**50**

To know basic concept of acid and base
To learn about alloy and their application
To learn uses and chemical properties of different organic compound

Unit-I

a) Acid and base: Concept of acid, base and salt, (Arrhenius theory and Lowry and Bronsted Theory), Conjugate pair, neutralization reaction.

b) Definition of pH, pOH and pH scale, (Numerical on pH scale) Buffer solution and its applications in everyday life.

Unit-II

a) Organic Compounds: Definition, saturated and unsaturated hydrocarbon, classification of organic compounds based on their functional groups. Definition of alkane, alkene and alkyne with examples.

b) Homologous series, IUPAC nomenclature of alkane, Laboratory preparation, chemical properties and uses of methane and ethylene.

Unit-III

(a) Alloy: Definition, Classification of alloy (ferrous and Non-ferrous), purpose of making an Alloy with examples.
(b) Composition, Properties and Application of stainless steel, brass, Bronze, Alnico and Duralumin.

Practical A

1. Titration of strong acid vs strong base(Acid-base double titration)
2. Determination of pH of different solutions by using pH meter/ pH paper.
3. Standardization of KMnO4 solution using standard oxalic acid
4. Determination of the percentage of iron present in given sample by KMnO4solution.
5. Determination of percentage of copper in given sample
6.Estimation of hydrochloric acid using sodium carbonate.
7. Estimation of Mohrs salt by dichrometry.

INTERNAL ASSESSMENT:

The internal assessment marks shall be awarded on the basis of assignments like class test, attendance, project assignments, seminar, study tour, industrial visits, field work, visits to educational and research organizations or any other innovative practice/ activity.

BOOK RECOMMENDED:

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2. Text Book of Physical Chemistry: B.S. Bahl and G.D. Tuli, S. Chand Publication, New Delhi.
3. A Text Book of Engineering Chemistry, S.S. Dara and Suresh Umare, S. Chand Publication, New Delhi.
4. A Text Book of Basic and Applied Chemistry, P.C. Jain and Monica Jain.
5. Polymer Science by V.R. Gowarikar, Wiley Ester Ltd. 1987.
6. Text Book of Organic Chemistry by J. L. Finar, Longman Publication.

B.Sc. Applied Science Semester-II
Core Subject (Credit-2+2)
2. Basic Biology

Total Marks	**100**
Theory	**40**
IA	**10**
Practical's	**50**

Objective:

3. To develop a knowledge about nature of life.
4. To develop a knowledge about horticultureand condiments and spices.

Unit I: -Cytology:cell structure and function: -Cell cycle and cell division. **Mendel's Laws: -**Dihybrid cross, Low of segregation, dominant, recessive, mutation & types of mutation, cytoplasmic inheritances.

Unit II:- Plant breading:- Tissue culture, concept of cellular totipotency, callus culture, hydroponics methods,

Horticulture: -Layout of kitchen garden, its parts, importance and cultivation of potato, Brinjal, Tomato, lady's finger. Layout of ornamental garden, its parts, importance and cultivation of marigold, rose. Nursery development: - Plant propagation, Budding, grafting, layering, Economics importance of horticulture.

UNIT III: -Condiments &Spices: -Introduction, Morphology, cultivation & their importance of *Cuminumcyminum*(Jeera) , *Foeniculum vulgare* (Saunf), *Curcuma longa* (Haldi), *Carumcopticum*(Ajwain), *Ferulaasafoetida* (Heeng) , *Capsicum annum* (Mirch) *Cinnamomumzeylanicum*(Dalchini) , *Cinnamomumtamala* (TejPatta) etc.Economic importance of spices and Geographical distribution of spices in India.

Definition of Medicinal plants & uses of Medicinal plants, Economic importance of Medicinal plants.

Practical:

1.To explain the different stages of mitosis/meiosis
2. To study the dihybrid cross of *Pisum sativum.*
3. To study the dominant and recessive Allels.
4. To explain the low of segregation.
5. Study and identification of vegetables, local flowers and their seeds.
6.Visit to Garden - Ornamental and Kitchen.
7. To identification and comment upon the given spices.
8.Project/ Seminars Presentations/ Herbarium.

References / Books Recommended

1. Plant Biology -Dr. P S Verma and Dr. V. K. Agrawal – S Chand Publication
2. Life Science - Dr. P S Verma-S Chand Publication
3. Plant breeding- Dr. Anil Kumar Chaudhary & Dr. R. C. Chaudhary- RS. Scientific Publication.
4. Fundamentals of horticulture- prof. Triloki Nath & DR. L.P. Yadav
5. Vanaspati Vigyan 0 P Singh & A K Singh , Sanjay Publication Agra
6. Vanasptividyan -Dr. O. P. Singh and Dr. A. N. Shende -Ram prasad publication.
7. Plant Propogation - M. K. Sadhu
8. Experimental botany- OP Singh & AN Shende- Ramprasad Publication.
9. Text Book of Entomology - Dr. D. B. Tembhare.

B.Sc. Applied Science Semester-II
Core Subject (Credit-2+2)
3. Basic physics

Total Marks	**100**
Theory	**40**
IA	**10**
Practical's	**50**

COURSE OBJECTIVES: At the end of course, students will able to

1Understand basic unit of various physical quantities and measurement devices.
2Enable the students to get knowledge on electricity and electrical safety devices.
3Impart knowledge on the basics of semiconductor.
4Inculcate an idea of significance of nano materials properties, synthesis method.
5Develop the ability to apply concepts of Nanomaterials and computer to understanding various applications.

UNIT: I UNITS, DIMENSION AND MEASUREMENT

Unit, Physical Quantities: Fundamental and Derived Quantities and their units with dimension, Systems of units: CGS, MKS and SI, Scalar and Vector Physical Quantities. Causes of Errors in Measurement, Applications of Vernier callipers, Screw gauge.

UNIT-II: ELECTRICITY AND SAFETY DEVICES

Concept of charge, Coulomb's inverse square law, Electric field, Electric field intensity, potential and potential difference, Concept of current, voltage, resistance, capacitor, Inductor, Transformer, Ohm's Law, Conductors and Insulators of electricity and their applications, Household wiring- safety features- fuse, MCB and earthing,Lightning conductor.

UNIT-III: SEMICONDUCTOR PHYSICS

Formation of energy bands in solid, classification of material on the basis of energy band, Intrinsic Semiconductors – Carrier concentration in intrinsic semiconductors – extrinsic semiconductors - Carrier concentration in N-type & P-type semiconductor, P-N junction diode, Forward biasing, Reverse Biasing and various types of diode.

INTERNAL ASSESSMENT (Refer Direction)

Practical's (Any 10 to be performed)

1 ToidentifyandstudydifferentcomponentsinPhysicsLab.
2 Todetermine inner and outer diameterofacylinder usingVernierCallipers.
3 To determinethickness ofa smallobject UsingScrew Gauge.
4 ComparisonofmeasurementswithScale,VernierCallipersandScrewGauge.
5 To study and verifyohms law.
6 To study and verify V-I characteristics ofP-N junction diode.
7 Todeterminethevalueofresistorfrom given colourcode.
8 Tostudy Transformer.
9 To fill data in table format using MS word document, Save it and printthe file in landscape mode.
10 Use of various commands effects in MS word typed documents.
11 Visit to related industry/Manufacturing Unit/Electrical repair unit.

12 To study and identify a various types of diode in physics laboratory.

Text Books:

1 Engg. Physics by Avadhanulu&Kshirsagar S. Chand Prakashan.
2 ATextbookofEngg.Physics, N. N.PadoleandS. A.Pawade, DNA Publication,Nagpur 2021
3 A textbook on Physics for B.Sc (Home Science) by N. N.Padole-2023
4 Experimental Physics by N. N. Padole, P.K.Singh, L. Shaniware, Ram Prasad Publication, Agra
5 "Nanotechnology: Principles and Practices" by Sulabha K. Kulkarni

Reference Books:

1 Physics- Unit and Dimension: Master Book for Physics by T. M. Kishan.

2Fundamentals of Physics by David Halliday, Robert Resnik AndJerle Walker John Wiley &Sons 2002.

3 Fundamentals of Nanotechnology by N. N. Padole, Lap Lambert Academic Publishing 2022.

4 Electronic Engineering Material & Devices by John Allison (TMH)

5 Applied Physics by P.K. Mittal, I.K. International.

6 Applied Physics by K. C. Nandi, Tech. Max. Pune.

7 ElementsofComputerScience,S.K.Sarkar, A.K.Gupta,S.Chand&Co.,NewDelhi.

8 FundamentalofcomputersE. Balguruswamy,McGrawHillEducationPvt.Ltd.NewDelhi.
9Computerfundamental(concepts,system&application)PradeepK.Sinha,PritiSinha,Sixthedition2011, B.P.B. Publication.
10 ExperimentsinEngineeringPhysicsbyAvadhanulu,S.ChandPublications,NewDelhi.

B.Sc. Applied Science Semester-II

VSC (Credit: 2)

1. Chemistry practical skill

Total Marks	**50**
UA	**30**
CA	**20**

Practical

1) Detection of presence of carbohydrates in the given sample

2) Detection of presence of Fat and oils in the given sample

3) Detection of presence of proteins in the given sample

4) Estimation of glucose in given sample.

5) Estimation of fat content in given sample.

6) Estimation of lactose in given sample.

7) Estimation of ascorbic acid content in given sample.

8) To determine acetic acid in commercially vinegar using NaOH.

9) To estimate zinc by complexometric titration with EDTA.

B.Sc. Applied Science Semester-II

VSC (Credit: 2)

2. NURSERY, GARDENING AND LANDSCAPING

Total Marks	**50**
UA	**30**
CA	**20**

1. Introduction to Gardening, Garden Implements, and Accessories, Area, Measurements, Volumes, Layout - Planning, Different Designs; Containers - Earthen containers, pots, polybags, cement pots, ceramic pots; Propagation - Seeds, cuttings, layering, budding, and grafting

2. Features of Gardens - Gate, lawn, shrubbery, flower beds, borders, paths, hedges, edges, steps, statues, fountains, bird paths, streams, pools, waterfalls, rockery, arches, pergolas, hanging pots, bird paths, tea house.; Principles and Practices of landscape design for home gardens and public parks.; Ornamental Gardening - Scope; importance; nursery management; lawns, layout of lawn, grasses; lawn and its maintenance.

3. Design and layout of gardens for homes, schools, colleges, public buildings, parks, villages, and kitchen gardens.Green Houses-shade houses, uses application in horticulture. Pruning and training - objective and methods. Principles of making bonsai.

Laboratory Exercises:

1. Study of Garden tools and equipment.
2. Study of containers - earthen containers, pots, poly bags, cement pots and ceramic pots.
3. Preparation of nursery beds and sowing of seeds.
4. Layout of land for lawn.
5. Preparation of land for lawn.
6. Designing of home gardens
7. Planting of woody plants, bulbs and bedding plants.
8. Planting of shrubbery, hedges and edges.
9. Identification and growing of indoor plants of their basic requirements.
10. Practice in making bonsai.
11. Raising of root stocks for grafting and budding.
12. Propagation of plants through cuttings.
13. Practicing of layering and stooling (Guava)
14. Practicing of grafting (Mango)
15. Practicing budding in rose / citrus.
16. Visit to commercial nursery in the locality.
17. Preparation of potting mixture, potting and repotting.
18. Study or ring basin method in mango / citrus orchard.
19. Study of check basin method in vegetables.
20. Study of sprinkler irrigation method.

21. Study of drip irrigation method.
22. Layout of model kitchen garden.
23. Planning and designing of different of gardens

Suggested Readings:

1. Complete Gardening India - K.S.s Gopalaswamiengar
2. Gardening in India - Bose T. K. and Mukherjee
3. Design Elements of Landscape Gardening - Nambisan K.M.P.
4. Text-Book of Horticulture - Rao K. M.
5. Fruits-topical and sub-tropical - Bose, T.K. and Mitra, S. K.
6. Vegetables - Chaudhary, B.
7. Floriculture in India - Randhawa, G.S. &Mukhopadhay. A.

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B.Sc. Applied Science Semester-II

VSC (Credit: 2)

Measurement Techniques in Physics Lab

Total Marks	**50**
UA	**30**
CA	**20**

List of Experiments (Minimum 10 to be performed)

1. To determine diameter of given wire using screw gauge.
2. To determine inner and outer diameter of cylindrical body.
3. To determine the value of various resistor using colour code.
4. Use of ammeter and voltmeters of different ranges for measurement of Current and Voltage.
5. To verify the value of various resistor using Digital Multimeter.
6. To study different types of capacitors.
7. To study meter bridge/Potentiometer.
8. To study step down/Step up Transformer
9. To study P-N junction diode.
10. To study Ohm's Law
11. To study windows operating system.
12. To study MS word and apply various commands.
13. To study MS Excel and apply various formulae for calculation.
14. To prepare Power Point and adding animation effects.
15. To identify and study various measuring devices in Physics Laboratory.

Reference Books:

7. ExperimentsinEngineeringPhysics byAvadhanulu,S.Chand Publications,NewDelhi.
8. AText bookof EngineeringPhysics, N. N.PadoleandS. A.Pawade, DNAPublication,Nagpur.
9. Comdexcomputercourse,VikasGupta,PMPublication, NewDelhi.
10. C…..C….Computercha: by Ravindra Desai, Rajhans Publication, Pune.
11. Experimental Physics by N. N. Padole, Ram Prasad Publication Agra.
12. NavyaSwaroopat Excel: by Ravindra Desai, Rajhans Publication, Pune.

(Mr. N.M. Ghatbandhe)

(Dr. A. N. Shende)

(Dr Nandkishor N. Padole)