

SHIVAJI UNIVERSITY, KOLHAPUR



**Faculty of Interdisciplinary Studies Structure,
Scheme and Syllabus
for Bachelor of Vocation (B.Voc)
Advanced Diploma**

CANE AGRICULTURE AND SUGAR TECHNOLOGY Part II- Sem. III & IV

(Subject to the modifications that will be made from time to time)
Syllabus to be implemented from 2020-2021 onwards.

SHIVAJI UNIVERSITY, KOLHAPUR
PROPOSED STRUCTURE AND SYLLABUS (SEMESTER PATTERN)

Bachelor of Vocation (B.Voc.) Part II Cane Agriculture & Sugar Technology

1. TITLE: B. Voc. Part II (Cane Agriculture & Sugar)
Syllabus (Semester Pattern)

2. YEAR OF IMPLEMENTATION: Syllabus will be implemented from 2020-21

DURATION: B. Voc. Part I, II and III (Three Years)

B. Voc. Part I- Diploma (First Year)

B. Voc. Part II- Advanced Diploma (Second Year)

B. Voc. Part III- Degree (Third Year)

3. PATTERN OF EXAMINATION – Semester Pattern

Theory Examination – At the end of semester as per Shivaji University Rules

Practical Examination –

1. In the 1st, 3rd and 5th semester of B. Voc. There will be internal assessment of practical record, related report submission and project reports.
2. In the second semester of B. Voc. I there will be internal practical examination.
3. In the 4th and 6th semester of B. Voc. There will be external practical examination at the end of the semester.

4. MEDIUM OF INSTRUCTION : English / Marathi

5. STRUCTURE OF COURSE : B. Voc. Part-I, II and III

Two Semester Per Year

Two General Papers per year / semester

Three Vocational Papers per Year /

Semester Three Practical papers per
Year / Semester

One Project/Industry Visit/Study Tour /Survey

6. SCHEME OF EXAMINATION –

7. A) THEORY –

- The theory examination shall be at the end of each semester.
- All the general theory papers shall carry 40 marks and all the vocational theory papers shall carry 50 marks.
- Evaluation of the performance of the students in theory shall be on the basis of Semester examination as mentioned above.
- Question paper will be set in the view of entire syllabus preferably covering each Unit of the syllabus.
- Nature of question paper for Theory examination (excluding Business Communication paper)

- i. There will be seven questions carrying equal
 - ii. Students will have to solve any five questions.
- Q. No. 1 : Short answer type question with internal choice (Two out of Three)
- Q. No. 2 to Q. No. 6 : Long answer type questions
- Q. No. 7 : Short Notes with internal choice (Two out of Three)

B)PRACTICAL

Evaluation of the performance of the students in practical shall be on the basis of semester examination (Internal assessment at the end of I, III and V Semester and external examination at the end of IV and VI semester as mentioned separately in each paper

STANDARD OF PASSING –

As per the guidelines and rules of B.Voc.

8.STANDARD OF PASSING–

B.Voc PartII (Diploma) Semester– III

Sr No.	Paper No.	Title	Theory/Practical/ Project	Marks (Total)	Theory	Practical
19	XIX	Fundamentals of Financial Accounting – I	Theory /Practical	50	40	10
20	XX	Sugar Chemistry	Theory /Practical	50	40	10
21	XXI	Breeding Techniques in Sugarcane	Theory	50	50	-
22	XXI I	Instruments in Sugar Factory	Theory	50	50	-
23	XXI II	: Physical and Inorganic Chemistry	Theory	50	50	-
24	XXI V	Laboratory Work Paper No. XXI	Practical	50	-	50
25	XX V	Laboratory Work Paper No. XXII	Practical	50	-	50
26	XX VI	Laboratory Work Paper No. XXIII	Practical	50	-	50
27	XX VII	Project	Practical	50	-	50

B.Voc. Part II (Diploma) Semester– IV

Sr No.	Paper No.	Title	Theory/Practical/ Project	Marks (Total)	Theory	Practical
28	XXVIII	Fundamentals of Financial Accounting– II	Theory /Practical	50	40	10
29	XXIX	Fundamentals of Agronomy	Theory /Practical	50	40	10
30	XXX	Farming System & Sustainable Agriculture	Theory	50	50	-
31	XXXI	Hi-tech Horticulure	Theory	50	50	-
32	XXXI I	Management of Benefical Inset	Theory	50	50	-
33	XXXI II	LaboratoryWork PaperNo. XII	Practical	50	-	50
34	XXXI V	LaboratoryWork PaperNo. XIII	Practical	50	-	50
35	XXX V	LaboratoryWork PaperNo.XIV	Practical	50	-	50
36	XXX VI	Industrial Visit /StudyTour	Practical	50	-	50

SCHEME OFTEACHING:**B.Voc. Part I (Diploma) Semester– III**

Sr No.	Paper No.	Title	Distribution of workload		
			Theory	Practical	Total
19	XIX	Fundamentals of Financial Accounting– I	4	2	6
20	XX	Sugar Chemistry	4	2	6
21	XXI	Breeding Techniques in Sugarcane	4	-	4
22	XXII	Instruments in Sugar Factory	4	-	4
23	XXIII	: Physical and Inorganic Chemistry	4	-	4
24	XXIV	Laboratory Work Paper No. XXI	-	4	4
25	XXV	Laboratory Work Paper No. XXII	-	4	4
26	XXVI	Laboratory Work Paper No. XXIII	-	4	4
27	XXVII	Project	-	-	-
			20	16	36

B.Voc. Part I (Diploma) Semester– IV

Sr No.	Paper No.	Title	Distribution of workload		
			Theory	Practical	Total
28	XXVIII	Fundamentals of Financial Accounting– II	4	2	6
29	XXIX	Fundamentals of Agronomy	4	2	6
30	XXX	Farming System & Sustainable Agriculture	4	-	4
31	XXXI	Hi- tech Horticulure	4	-	4
32	XXXII	Management of Benefical Inset	4	-	4
33	XXXIII	Laboratory Work Paper No. XII	-	4	4
34	XXXIV	Laboratory Work Paper No. XIII	-	4	4
35	XXXV	Laboratory Work PaperNo.XIV	-	4	4
36	XXXVI	Industrial Visit /Study Tour	-	-	-
			20	16	36

Eligibility for Admission : 10 + 2 from any faculty or equivalent Diploma / Advanced Diploma in any related stream.

Eligibility for Faculty: 1) Diploma in Sugar Technology
2) Bachelor's Degree in Sugar Technology

Eligibility for Lab Assistant: Graduation with related field

Staffing Pattern

Teaching: In the 1st year of B.Voc.–One Full Time one C. H. B. for Business Communication Lab.Assistant : For 1st Year of B.Voc.– C.H.B
For 2nd and 3rd Year (Inclusive of 1st Year) of B.Voc.–3 Full Time

FUNDAMENTALS OF FINANCIAL ACCOUNTING – I

50 hrs

Work Load – 6

Total Marks – 50

Theory – 4 Lectures / Week

Theory- 40

Practical- 2 Lectures / Week

Practical- 10

OBJECTIVE :

To impart basic accounting knowledge as applicable to business.

COURSE CONTENT :

Unit I : Introduction to Accounting

Meaning, Nature and Advantages of Accounting, Branches of Accounting, Accounting Concepts and Conventions, Types of Accounts, Rules of journalizing, Source Documents – Cash Voucher, Petty Cash Voucher, Cash Memo – Receipts, Debit Notes, Credit Note, Paying Slips, Withdrawals, Cheque

Unit II : Journal and Ledger

Preparation of Journal entries and Ledger accounts – Subsidiary Books - Purchase Book, Purchase Return Book, Sales Book, Sales Return Book, Cash Book, Bills Receivable Book, Bills Payable Book, Journal Proper

Unit III: Depreciation

Meaning, Methods – Straight Line Method – Reducing Balance Method, Change in Depreciation Method.

Unit IV: Final Accounts

Preparation of Trial Balance, Preparation of Final Accounts of Sole Traders and partnership firms

PRACTICAL :

- 1) Preparation of Journal entries and Ledger accounts
- 2) Preparation of subsidiary books
- 3) Preparation of Trial Balance
- 4) Practical problems on Final Accounts of sole traders and partnership firms
- 5) Practical problems on methods of depreciation

Scheme of Internal Practical Evaluation

10 Marks

- 1) Submission of Record Book
- 2) Viva – Voce

5 Marks
5 Marks

REFERENCE BOOKS :

- 1) Advanced Accountancy – M.C. Shukla and T.S. Garewal.
- 2) Advanced Accountancy – S.C. Jain and K. L. Narang
- 3) Advanced Accountancy – S.M. Shukla.
- 4) Advanced Accountancy – S. N. Maheshwari.

5) Advanced Accountancy – R. L. Gupta.

Bachelor of Vocation(B.Voc.) PartII- Sem.III

PaperNo.II : Sugar Chemistry

Theory:4 lectures/ week

Total Marks : 50 (Theory 40 + Practical10)

Practical:2lectures/week/batch

UNIT 1: INRODUCTION

- Carbohydrate
- Sucrose
- Crystallization

UNIT 2: DETAILS ABOUT PROTINES

- Nonsugars
- Proteins & Amino Acids
- Coloring Matter
- Colour Removar

UNIT 3: ANALYSIS OF SUGAR

- Introduction of Sugar
- Sugar Analysis

UNIT 4: SUGAR DERIVATIONS

- Sugar Derivatives Reports
- Sugar alcohols
- Sugar Alcohols

• References :

Biochemistry by *Dr.Sumanthi* Professor& HOD Department of Biochemistry, Rajendranagar, Hyderabad.

Manure & Fertilizer by *Dr. K Sreenivasulu Reddy, Dr. M V S Naidu, Dr. P MadhuVani, Dr. D Padmaja, Dr. P Kavitha, Dr. P R K Prasad* Department of soil science Agricultural College tirupati.

Dr.Sailaja V, Dr. P Kavitha, Dr. P R K Prasad Department of soil science Agricultural College Hyderabad.

Dr. PrabhuPrasadini Proffesor Department of Environmental Science College of Agriculture, Rajendranagar.

Reference links and e -books:

<https://link.springer.com/article/10.1007/BF0>

<https://www.biologydiscussion.com/economic-botany/...>

(A) Practicals(Based onthe aboveUnits):

1. Visit toIndustry
2. Surveyregardingmanagement in retail malls

PaperNo.XXI :Breeding Techniques in Sugarcane

Theory:4 lectures/ week

Total Marks : 50

UNIT 1: BREEDING TECHNIQUES IN SUGARCANE

- Introduction
- Raising of seen cane crop-ideal seed cane
- Germination

UNIT 2: BREEDING METHODS

- Introduction
- Clonal selection
- Hybridization
- Mutation Breeding

UNIT 3 : OBJECTIVES OF SUGARCANE BREEDING

- Breeding for yield, logging, resistance to diseases
- Sugarcane breeding institutes in india
- Breeding Process
- Objectives of breeding

UNIT 4 : PHYSIOLOGY OF SUGARCANE

- Physiology f sugarcane under normal conditions.
- Rapid screening parameters for salt stress
- Agro-technology to improve germination undar saline condition

- **Reference:**

Manure & Fertilizer by *Dr. K Sreenivasulu*, *Dr. D Padmaja*, *Dr. P Kavitha*, *Dr. P R K Prasad*
Department of soil science Agricultural College Hyderabad.

Pest of crops and their management by *Dr. G dayakar*, *Dr. V Deva Prasad*, *Dr. Hariprsad*,
Dr. K Loka Reddy, *Dr. T Madhumati* Department of Entomology, Bapatla.

Diseases of Fields Crop and their managent by *Dr.P. Kishore Varma* Assistant Professor,
Department of Plant Pathology, Aswaraopet.

Reference links and e –books :

<https://www.researchgate.net/publication/259810628...>

https://www.organicconsumers.org/sites/default/files/what_is_organic_farming.pdf

<https://nal.usda.gov/legacy/fnic/organic-foods>

PaperNo.XXII :Instruments in Sugar Factory

Theory:4 lectures/ week

Total Marks : 50

UNIT 1: INTRODUCTION OF SPECTROPHOTOMETER

- Introduction of Spectrophotometer
- General principal of Absorption spectroscopy colorimetry- construction &working beer

UNIT 2:FLAME PHOTOMETER

- Meaning and Introduction.
- Instrument Information and their Usage.
- Basic principal,
- Elementary theory,
- construction instrumentation of flame photometer

UNIT3:POLARIMETRY

- Meaning.
- plane polarized light,
- instrumentation system of polar meter,

UNIT 4 :PH & CONDUCTIVITY MEASUREMENTS

- Ph meter,
- instrumentation of ph meter,
- Conductivity mater instrumentation of conductivity mater,
- Wheatstone bridge
- conductivity cell application

References Books-

- 1)Agricultural Meteorology- G.S.L.H.V. Prasad Rao, Kerala Agricultural University Publications.
- 2) Text book of Agricultural Meteorology – M. C. Varshneya and P. Balkrishna Pillai.
- 3) Introduction to Agro-meteorology- H. S. Mavi
- 4) Our Atmosphere- Smita Bhutani

Websites-

www.sciencescene.com/Environmental Science...

<https://wiki.ezvid.com/best-environmental-science-textbooks>

<https://sf.sawfinder.com/best-environmental-science-textbook>

PaperNo.XXIII : Physical and Inorganic Chemistry

Theory:4 lectures/ week

Total Marks : 50

UNIT 1 SOLUTION AND STENGTH SOLUTION

- Definitions of the terms : Soltue, solvent, solution & dilute solution.
- Concentration units : Normality,
 - Molarity, ,
 - molality, mole fraction,
 - weight reaction,
 - percentage composition by weight ant volume

UNIT 2 CHEMICAL KINETICS

- Introduction
- Rate of reaction,
- definition and units of rate constants,
- factors affection the rate of reaction, order
- molecularity of reaction..

UNIT 3 CHEMICAL BONDING

- Introduction & definition with example of each. a) Ionic bond.
- b) Covalent bond
- c) Coordinate bond
- d) Metallic bond
- e) Hydrogen bond
- f) Vander waal's forces.

UNIT 4 NON SUGARS IN SUGARCANE JUICES

- Colored non sugar from sugar decomposition product – a) caramel
- b) sugar decomposition product
- c) inversion of sucrose.

Reference Books :

- 1 Mathematical preparation of Physical chemistry :F.Daniel, Mcgraw hill
- 2 Elements of Physical chemistry :S.Glasstone&D.Lewis (D.van Nostrand Co-Inc)
- 3 Physical chemistry :W.J.Moore (Orient Longman) 4 Principles of Physical chemistry : Maron-Prutton

Reference links and e -books:

<https://link.springer.com/article/10.1007/BF0>

<https://www.biologydiscussion.com/economic-botany/...>

[skyjournals.org/sjar/pdf/2013pdf/Jan/Singh pdf.pdf](https://www.researchgate.net/publication/278405678)

<https://www.researchgate.net/publication/278405678>

Paper No- XXIV: Laboratory Work For Paper No- XXI

Total Marks – 50

Practical : 4 lectures / week/per batch

Practicals :

1. Estimation of soil moisture by different methods
2. Determination of Bulk and Particle Density.
3. Determination of Field Capacity by field method and by pressure plate membrane apparatus
4. Determination of PWP method and by pressure plate membrane apparatus
5. Study of Soil moisture Measuring Devices and its installation.
6. Determination of Infiltration by Double Ring Infiltrometer.
7. Estimation of Gross water requirement, Net water requirement, Irrigation Interval, Available Soil Moisture.
8. Scheduling of Irrigation by different methods.

Paper No- XXV: Laboratory Work For Paper No- XXII

Total Marks– 50

Practical : 4 lectures / week/per batch

Practical

1. Sowing methods of wheat and sugarcane,
2. identification of weeds in rabi season crops,
3. study of morphological characteristics of rabi crops,
4. study of yield contributing characters of rabi season crops, yield and juice quality analysis of sugarcane,
5. study of important agronomic experiments of rabi crops at experimental farms.
6. Study of rabi forage experiments, oil extraction of medicinal crops,
7. visit to research stations of related crops.
8. Mechanization in crop cultivation of kharif crops

Paper No- XXVI: Laboratory Work For Paper No- XXVII

Total Marks – 50

Practical : 4 lectures / week/per batch

Practical-

1. Visit to organic farms to study the various components and their utilization;
2. Preparation of enrich compost, vermicompost,
3. bio-fertilizers/bio-inoculants and their quality analysis;
4. Indigenous technology knowledge (ITK) for nutrient, insect, pest disease and weed management;
5. Cost of organic production system;
6. Post harvest management for Quality aspect
7. Post harvest management for grading,
8. packaging and handling.

Paper No- IX: Project

Internal practical evaluation

50marks

i) Submission of practical record book=20marks

ii) Submission of visit report=15 marks

iii) Viva-voce 15=marks

SEMESTER II

GENERAL EDUCATION PAPER:

B.VOC Part-II (Diploma)

Paper –XXVIII :FUNDAMENTALS OF FIANACIAL ACCOUNTING – II

Total Workload: 06 lectures per week of 50 mins.

Distribution of Workload:

Theory: 04 lectures per week
Practical: 02 lectures per week per batch of 20 students

Units Prescribed for Theory: (50 Marks)

Unit I Computerized Accounting System

Introduction – Concept – Components –Features - Importance and Utilization of Computerized Accounting System.

Unit II Computer Application through Accounting Package Tally (10 Lectures)

Creation of Company, Group, Ledger Accounts, Feeding of Accounting Data Receipts, Payments, Purchase, Sale, Contra, Journal, Credit Note and Debit Note Inventory Information – Groups, Items and Valuation.
Generation of various Accounting Reports.

Unit III Accounts of Professionals

Preparation of Receipts and Payment Account – Income and Expenditure Account and Balance Sheets of Non Profit Organization.

Unit IV Single Entry System

Conversion of Single Entry System into Double Entry System.

PRACTICAL :

1. Understanding computerized accounting practices applied in different retail malls in and around Kolhapur city
2. Practical problems based on computerized accounting using Tally
3. Practical problems on preparation of Receipts and Payment Account
4. Preparation of Income and Expenditure account and Balance Sheet of Non-profit making organizations
5. Solving the problems on conversion of Single Entry system into Double entry system.
6. Oral / Seminar

REFERENCE BOOKS :

1. Advanced Accountancy, M. C. Shukla and T. S. Garewal.
2. Advanced Accountancy, S.C. Jain and K. L. Narang.
3. Advanced Accountancy, S.N. Maheshwari.
4. Theory and practice of Computer Accounting, RajanChougule and Dhaval Chougule.

WEB SITES :

- 1) www.nos.org
- 2) www.wiki.answers.com
- 3) Chow.com

Scheme of External Practical Examination**10 marks**

- 1) Submission of Record book
- 2) Viva – Voce

5 marks

5 mark

PaperNo.XXIX : Fundamentals of Agronomy

Theory:4 lectures/ week

Total Marks : 50 (Theory 40 + Practical10)

Practical:2lectures/week/batch

UNIT –I INTRODUCTION

- Agronomy, its definition,
- scope, role of Agronomist
- relationship of Agronomy with other sciences.

UNIT –II TILLAGE

- Tillage, its definition,
- objects of tillage,
- types of tillage,
- tillage implements and factors affecting tillage,
- Effect of tillage on soil and crop growth

UNIT-III SEEDS

- Seed, its definition,
- characteristics of quality seed,
- seed treatment and its objectives seed dormancy,
- causes of seed dormancy and multiplication,
- stages of seed

UNIT IV METHODS

- Methods of sowing seed
- sowing implements.

Reference Books

- 1) Chhidda Singh, Modern techniques of raising field crops. Oxford and IBH Publishing Co. Ltd., Bangalore.
- 2) Gopal Chandra De. 1980., Fundamentals of Agronomy. Oxford and IBH Publishing Co. Ltd., Bangalore.
- 3) Hand book of Agriculture, ICAR Publication.
- 4) Palaniappan, S.P., Cropping Systems in the tropics – Principles and Practices. Willey Eastern Ltd., New Delhi.
- 5) Panda, S.C., 2006. Agronomy Agribios Publication, New Delhi.

Paper No. XXX : Farming System and Sustainable Agriculture

Theory: 4 lectures/ week

Total Marks : 50

UNIT I: FARMING SYSTEM

- Definition,
- scope,
- concept
- objective of Farming Systems

UNIT II: CLASSIFICATION

- Classification of Farming systems and
- factors affecting
- Study of different components of Farming System and their maintenance

UNIT III: CHEMICAL BONDING

Introduction & definition with example of each. a) Ionic bond.

b) Covalent bond

c) Coordinate bond

UNIT IV: CORROSION & ITS PREVENTION

- Introduction
- corrosion and its causes
- classification

Reference Book

1. Physics :S.G.Starling&Woodlal, Longmamas& green co.Ltd.

2 Textbook of properties of matter :N.S.Khare&S.Kumar, Atmaram & sons, New Delhi.

3 Physics Vol.I&II : Resnik & Halliday, Willey Ester ltd. New Delhi.

4 Treaties on heat : Shah & Shrivastava.

5 Kinetic Theory of gases :V.N.Kelkar

6 Heat &thermodynamics :Brijlal&Subramananyam, S.Chand&

PaperNo.XXXI : Hi-tech Horticulture

Theory:4 lectures/ week

Total Marks : 50

UNIT I :INTRODUCTION

- Introduction, importance and scope of Hi- tech horticulture in India
- Hi- tech nursery management and mechanization of horticultural crop
- Micro- propagation of horticultural crops

UNIT II: METHODS

- Hi- tech field preparation and planting methods
- Protected cultivation: advantages and constraints
- Environmental control in green house -- temperature, light, CO₂, relative humidity and ventilation methods and techniques.

UNIT III: SYSTEMS

- Micro irrigation systems and its components
- EC and pH based irrigation / fertigation scheduling
- Hi-tech canopy management of horticultural crop

UNIT IV: COMPONENTS OF FARMING

Remote sensing and Geographical Information System (GIS)

Differential Geo-positioning System (DGPS)

Components of precision farming and application of precision farming in horticultural crops

Reference Books :

- 1 T. A. More, Karale A. R. and Patil M.T. 2001. Hi-tech Horticulture, CAFT (Fruits), MPKV, Rahuri.
2. Balraj Singh.2005. Protected cultivation of vegetable crops, Kalyani Publishers, New Delhi.
3. Patil, M.T and Patil, P.V. 2004. Commercial Protected Floriculture, MPKV, Rahuri
4. Commercial Floriculture – Prasad & Kumar.

PaperNo.XXXII :Management of Beneficial Insects

Theory:4 lectures/ week

Total Marks : 50

UNIT I- INTRODUCTION

- Importance of beneficial insects in Agriculture,
- Various Institutes related to beneficial insects

UNIT II - APICULTURE

- Introduction and history of Beekeeping
- Bee keeping, morphology and anatomy, bee biology,
- Pollinating plants
- cycle, bee conservation

UNIT III- GENREAL CLASSIFICATION

- Important insect orders bearing predators and parasitoids used in pest control
- Identification of major parasitoids and predators commonly used in biological control of crop pests.

UNIT IV- MASS MULTIPLICATION

- Mass multiplication and field release techniques of some important parasitoids
- Important species of pollinator and scavengers with their importance

Reference Book-

- 1) Singh, S., 1975. Bee keeping in India – ICAR, New Delhi., 214p.
- 2) Sunita, N.D, Guled, M.B, Mulla, S.R and Jagginavar, 2003, Beekeeping, UAS Dharwad
- 3) Mishra, R.C. and Rajesh Gar. 2002. Prospective in Indian Apiculture. Agrobios, Jodhpur.
- 4) Singh, D. and Singh, D.P. 2006. A Hand Book of Beekeeping, Agrobios (India).

Paper No- XXXIII: Laboratory Work For Paper No- XII

Total Marks– 50

Practical : 4 lectures / week/perbatch

1. Identification of Ornamental plants.
2. Identification of Medicinal and Aromatic Plants.Nursery bed preparation and seed sowing.
3. Training and pruning of Ornamental plants.
4. Planning and layout of farm
5. Bed preparation and planting of MAP.Protected structures – care and maintenance.
6. Intercultural operations in plant and MAP.
7. Harvesting and post-harvest handling of cut and loose roots.
8. Processing of MAP. Visit to commercial flower/MAP unit.

Paper No- XXXIV: Laboratory Work For Paper No- XIII

Total Marks– 50

Practical : 4 lectures / week/perbatch

1. Seed propagation.
2. Scarification and stratification of seeds.
3. Propagation methods for roots
4. plantation crops including Micro-propagation.
5. Description and identification of plant
6. .Preparation of plant bio regulators and their uses, Pests, diseases and
7. physiological disorders of above leaves and plantation crops,
8. Visit to commercial orchard

Paper No- XXXV: Laboratory Work For Paper No- XXXII

Total Marks– 50

Practical : 4 lectures / week/perbatch

1. Identification of other important pollinators, weed killers and scavengers.
2. Visit to research and training institutions devoted to beekeeping
3. Identification of garden tools.
4. Identification of horticultural crops.
5. Preparation of seed bed/nursery bed. Practice of sexual and asexual methods of propagation.
6. Layout and planting of orchard plants. Training and pruning of fruit trees.
7. Transplanting and care of vegetable seedlings.
8. Making of herbaceous and shrubby borders. Preparation of potting mixture, potting and repotting.
9. Fertilizer application in different crops. Visits to commercial nurseries/orchard.

Paper No- XXXVI: Project

Internal practical evaluation

50marks

iii) Submission of practical record book=20marks

iv) Submission of visit report=15 marks

iii) Viva-voce 15=marks

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**Faculty of Interdisciplinary Studies Structure,
Scheme and Syllabus
for Bachelor of Vocation (B.Voc)
Degree**

**CANE AGRICULTURE AND SUGAR
TECHNOLOGY
Part III- Sem. V & VI**

(Subject to the modifications that will be made from time to time)
Syllabus to be implemented from 2020-2021 onwards.

B.Voc Part III (Diploma) Semester– V

Sr No.	Paper No.	Title	Theory/Practical/ Project	Marks (Total)	Theory	Practical
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37	XXX VII	Applied Chemistry	Theory /Practical	50	40	10
38	XXX VIII	Advance Sugar Industries & Technology	Theory /Practical	50	40	10
39	XXXI X	Equipment Design & Capacity Calculation	Theory	50	50	-
40	XXX X	Business management & marketing	Theory	50	50	-
41	XXX XI	Alcohol Technology (part I)	Theory	50	50	-
42	XXX XII	Laboratory work PaperXXXIX	Practical	50	-	50
43	XXX XIII	Laboratorywork PaperXXXX	Practical	50	-	50
44	XXX XIV	Laboratory work PaperXXXXI	Practical	50	-	50
45	XXX XV	Internship	Practical	50	-	50

B.Voc. Part III (Diploma) Semester– VI

Sr No.	Paper No.	Title	Theory/Practical/Project	Marks (Total)	Theory	Practical
46	XXXXV I	Process instrumentation & Comtel	Theory /Practical	50	40	10
47	XXXXV II	Advance Sugar Engineering	Theory /Practical	50	40	10
48	XXXXV III	Allied sugar Co-products	Theory	50	50	-
49	XXXXI X	Alcohol Technology (part-II)	Theory	50	50	-
50	XXXXX	Sugar cane Agriculture	Theory	50	50	-
51	XXXXX I	Laboratory work XXXXVIII	Practical	50	-	50
52	XXXXX II	Laboratory work Paper XXXXIX	Practical	50	-	50
53	XXXXX III	Laboratory work Paper XXXXX	Practical	50	-	50
54	XXXXX IV	Project	Practical	50	-	50

SCHEME OFTEACHING:

B.Voc. Part III (Diploma) Semester– V

Sr No.	Paper No.	Title	Distribution of workload		
			Theory	Practical	Total
37	XXXVII	Applied Chemistry	4	2	6
38	XXXVI II	Advance Sugar Industries & Technology	4	2	6
39	XXXIX	Equipment Design & Capacity Calculation	4	-	4
40	XXXX	Business management & marketing	4	-	4
41	XXXXI	Alcohol Technology (part I)	4	-	4
42	XXXXI I	Laboratory work PaperXXXIX	-	4	4
43	XXXXI II	Laboratorywork PaperXXXX	-	4	4
44	XXXXI V	Laboratory work PaperXXXXI	-	4	4
45	XXXXV	Internship	-	-	-
			20	16	36

B.Voc. Part III (Diploma) Semester– VI

Sr No.	Paper No.	Title	Distribution of workload		
			Theory	Practical	Total
46	XXXXVI	Process instrumentation & Comtel	4	2	6
47	XXXXVI I	Advance Sugar Engineering	4	2	6
48	XXXXVI II	Allied sugar Co- products	4	-	4
49	XXXXIX	Alcohol Technology (part-II)	4	-	4
50	XXXXX	Sugar cane Agriculture	4	-	4
51	XXXXXI	Laboratory work XXXXVIII	-	4	4
52	XXXXXI I	Laboratory work Paper XXXXIX	-	4	4
53	XXXXXII I	Laboratory work Paper XXXXX	-	4	4
54	XXXXXI V	Project	-	-	-
			20	16	36

Annexure I

Standard of passing:

- A. For B.Voc. programme total credits shall be 180 with 30 credits for each semester. There shall be 12 credits for theory and 18 credits for practical per semester.
- B. Subject wise credits are mentioned in the concerned syllabus of every B.Voc. Program.
- C. The standard of passing shall be 35 % where the student will have to score 18 marks out of 50, 14 marks out of 40 and 4 marks out of 10.
- D. Rules for ATKT are mentioned below:
 - I. Internal examination will be compulsory for all students. If the student is absent/fail in the internal examination then he/she will have to clear the internal examination. However ATKT rules will be followed in respect of theory and practical papers only. Then the student is allowed to keep term in the third fifth semester even if he/she has failed in the three less than three beads (ie. theory and practical) of passing each semester. However he/she shall have to clear all the papers of semester I & II before taking admission to the fifth semester.
 - II. In the B.Voc. Part II, every student has to complete internship of concerned industry

Award of degree:

- B.Voc. is a six semester integrated course spread over the period of 3 years. The course of B.Voc. will be 3 years integrated course commencing from the years as mentioned below:
 - a. B.Voc. Part-I: Semester I & II- Diploma
 - b. B.Voc. Part-II: Semester III & IV-Advanced diploma
 - c. B.Voc. Part-III: Semester V & VI-B.Voc. Degree
- The candidate may take exit after one year of successful completion of the course. After successful completion of one year (Semester I & II) the candidate will get Diploma. After successful completion of two years (Semester III & IV), the candidate will get Advanced Diploma. The students those who have completed the entire three years (Semester V & VI) integrated course shall be awarded B.Voc. Degree programme, inclusive of Diploma and Advanced Diploma.
- The candidate admitted for direct second year or third year will get Class (First/Second/Pass class) as per their performance for B.Voc.

- **Scheme of mark:**

Grading chart:**A. Grading chart of 50 points:**

Sr.No.	Marks Obtained	Numerical grade (grade point)	CGPA	Letter grade
1	Absent	0 (Zero)	-	-
2	0-17	0 (Zero)	0.0-4.99	F (Fail)
3	18-22	5	4.50-5.49	C (Satisfactory)
4	23-27	6	5.50-6.49	B (Average)
5	28-32	7	6.50-7.49	B+ (Good)
6	33-37	8	7.50-8.49	A (Very Good)
7	38-42	9	8.50-9.49	A+ (Excellent)
8	43-50	10	9.50-10.00	O (Outstanding)

Note:

- i. Marks obtained 0.5 shall be rounded off to next higher digit.
- ii. The SGPA & CGPA shall be rounded off to 2 decimal points.
- iii. Marks obtained in 50 marks or 200 marks paper shall be converted to 100 marks.

Calculation of SGPA & CGPA**1. Semester Grade Point Average (SGPA)**

$$\text{SGPA} = \frac{\sum (\text{Course Credits} \times \text{Grade Points Obtained}) \text{ of a semester}}{\sum (\text{course credits}) \text{ of respective semester}}$$

2. Cumulative Grade Point Average (CGPA)

$$\text{CGPA} = \frac{\sum (\text{Total Credits of A Semester} \times \text{SGPA of Respective Semester}) \text{ of all semesters}}{\sum (\text{Total Course Credits}) \text{ of all semester}}$$