SHIVAJI UNIVERSITY, KOLHAPUR

Accredited By NAAC with 'A' Grade

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

Horticulture and Floriculture

Part I- Sem. I & II

Syllabus to be implemented from

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

SHIVAJI UNIVERSITY, KOLHAPUR
STRUCTURE AND SYLLABUS OF B.VOC.

Bachelor of Vocation (B.Voc.) – Horticulture and Floriculture

TITLE : B.Voc. (Horticulture and Floriculture)
Syllabus (Semester Pattern)
Under Faculty of Interdisciplinary Studies

YEAR OF IMPLEMENTATION : Syllabus will be implemented from June, 2020

DURATION : B. Voc. Part I, II and III (ThreeYears)
B. Voc. Part I - Diploma (One Year)
B. Voc. Part II - Advanced Diploma (Second Year)
B. Voc. Part III – Degree (ThirdYear)

PATTERN OF EXAMINATIOM : Semester Pattern

- **Theory Examination** - At the end of semester as per Shivaji University Rules
- **Practical Examination** - i) In the1st, 3rdand 5thsemester of B.Voc. there will be internal assessment of practical record, related report submission and project reports at the end of semester
  ii) In the second semester of B. Voc. I, there will be internal practical examination at the end of semester
  iii) In the 4thand 6thsemester of B. Voc. there will be external practical examination at the end of semester

MEDIUM OF INSTRUCTION : English/ Marathi.

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.

SCHEME OF EXAMINATION :

A) THEORY-

• The theory examination shall be at the end of the each semester.

• All the general theory papers shall carry 40marks and all vocational theory papers shall carry 50marks.

• 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 marks.

ii) Students will have to solve any five questions

Que. No. 1 : Short answer type question with internal choice (Two out of Three)

Que. No. 2 to Que. No. 6: Long answer type questions.

Que. No. 7 : Short Notes with internal choice (Two out of Three)

B) PRACTICALS :

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

Standard of Passing:

As per the guidelines and rules for B. Voc. (Attached Separately – Annexure I)

Eligibility Criteria:

1. The Eligibility for admission is 10+2 or equivalent, in any stream (Arts/Commerce/Science) from any recognized board or University.
2. The candidates after with 10+2 year ITI course/ in any branch/trade also eligible for course.
3. The candidates graduate from any faculty or engineering degree/diploma holders are also eligible.

Structure of the Course:

B. Voc. –I (Diploma) Semester –I

Sr. No.	Paper No.	Title	Theory/ Practical /Project	Marks (Total)	Distribution of Marks		Credits	
					Theory	Practical	Theory	Practical
	A	**General Education Components**						
1	I	Business Communication- I	Theory/ Practical	50	40	10	3	2
2	II	Fundamental of Soil Science	Theory/ Practical	50	40	10	3	2
	B	**Skill Development Components**						
3	III	Fundamentals of Agronomy	Theory	50	50	--	3	--
4	IV	Fundamentals of Horticulture	Theory	50	50	--	3	--
5	V	Production Technology of Cut Flowers	Theory	50	50	--	3	--
	C	**Laboratory Work**						
6	VI	Fundamentals of Agronomy	Practical	50	--	50	--	3
7	VII	Fundamentals of Horticulture	Practical	50	--	50	--	3
8	VIII	Production Technology of Cut Flowers	Practical	50	--	50	--	3
	D	**Field Work**						
9	IX	Project/ Industrial Visit /Nursery visit/ Study Tour		50	--	50	--	2
	E	**Non Credit Courses**						
		Democracy, Elections and Good	Theory	50	50	--	--	--

		Governance						

General Education Components: The subject (Department/Discipline) in which a student takes admission

Skill Development Components:The subject closely related to a student's major subject

Non-Credit compulsory Courses**:** Six courses are of general nature and are compulsory

B. Voc. –I (Diploma) Semester –II

Sr. No.	Paper No.	Title	Theory/ Practical /Project	Marks (Total)	Distribution of Marks		Credits	
					Theory	Practical	Theory	Practical
	A	**General Education Components**						
1	X	Business Communication-II	Theory/ Practical	50	40	10	3	2
2	XI	Fertilizer & Pesticide : Sustainable approaches	Theory/ Practical	50	40	10	3	2
	B	**Skill Development Components**						
3	XII	Principles of Genetics and Cytogenetics	Theory	50	50	--	3	--
4	XIII	Growth and Development of Horticultural Crops	Theory	50	50	--	3	--
5	XIV	Nursery Management	Theory	50	50	--	3	--
	C	**Laboratory Work**						
6	XV	Principles of Genetics and Cytogenetics	Practical	50	--	50	--	3
7	XVI	Growth and Development of Horticultural Crops	Practical	50	--	50	--	3
8	XVII	Nursery Management	Practical	50	--	50	--	3
	D	**Field Work**						
9	IX	Project/ Industrial Visit /Nursery visit/ Study Tour		50	--	50	--	2
	E	**Non Credit Courses**						
		Democracy, Elections and GoodGovernance	Theory	50	50	--	--	--

General Education Components: The subject (Department/Discipline) in which a student takes admission

Skill Development Components:The subject closely related to a student's major subject

Non-Credit compulsory Courses**:** Six courses are of general nature and are compulsory

Scheme of Teaching: B. Voc. – Part I (Diploma) Semester – I

Sr. No.	Paper No.	Title	Distribution of workload (Per Week)		
			Theory	Practical	Total
1	I	Business Communication- I	4	2	6
2	II	Fundamental of Soil Science	4	2	6
3	III	Fundamentals of Agronomy	4	-	4
4	IV	Fundamentals of Horticulture	4	-	4
5	V	Production Technology of Cut Flowers	4	-	4
6	VI	Laboratory Work- Fundamentals of Agronomy	-	4	4
7	VII	Laboratory Work- Fundamentals of Horticulture	-	4	4
8	VIII	Laboratory Work- Production Technology of Cut Flowers	-	4	4
9	IX	Project/ Industrial Visit/ Nursery Visit / Study Tour.	-	-	-
		Democracy, Elections and GoodGovernance	-	-	-
			20	16	36

Scheme of Teaching: B. Voc. – Part I (Diploma) Semester – II

Sr. No.	Paper No.	Title	Distribution of workload (Per Week)		
			Theory	Practical	Total
1	X	Business Communication- II	4	2	6
2	XI	Fertilizer & Pesticide : Sustainable approaches	4	2	6
3	XII	Principles of Genetics and Cytogenetics	4	-	4
4	XIII	Growth and Development of Horticultural Crops	4	-	4
5	XIV	Nursery Management	4	-	4
6	XV	Laboratory Work- Principles of Genetics and Cytogenetics	-	4	4

7	XVI	Laboratory Work- Growth and Development of Horticultural Crops	-	4	4
8	XVII	Laboratory Work-Nursery Management	-	4	4
9	XVIII	Project/ Industrial Visit/ Nursery Visit / Study Tour.	-	-	-
		Democracy, Elections and GoodGovernance	-	-	-
			20	16	36

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

Eligibility for Faculty **:** M.Sc./M.B.A.(Agri., Horticulture, Agri. Economics, Agri Business Management, Plant Pathology, Agri. Engineering, Agri. Extension)with NET / SET/Ph.D. M. A (English) with NET/SET for Business Communication

Eligibility for Laboratory Assistant: B.Sc.(Agri.)/ Diploma in Agriculture

Staffing Pattern **:** In 1st Year of B. Voc. - 1 Full Time and 1 Part Time Lecturer and 1 CHB Lecturer for Business Communication

Laboratory Assistant **:** For 1st Year of B. Voc. - 1 Part-time

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SHIVAJI UNIVERSITY, KOLHAPUR

B. Voc. Part – I, Semester – I

Horticulture and Floriculture

Paper – I: Business Communication-I

Distribution of Workload:

Theory : 04 lectures perweek

Practical : 02 lectures per week per batch

Total Marks: 50 Marks (Theory 40 + Practical 10)

Unit –I:UseofEnglishinBusinessEnvironment.

BusinessVocabulary:Vocabularyforbanking,marketingandformaintaining Publicrelations.

What is a sentence? Elements of a sentence.

Types of sentence: Simple, compound, complex

Unit- II: Writing a Letter of Application and CV/Resume

Structureofaletterofapplicationforvariousposts CV/Resume and itsessentials

Unit- III:Presenting Information / Data.

Presentinginformation/datausinggraphicsliketables,pie charts,treediagrams, bar diagrams, graphs, flowcharts

Unit - IV:Interview Technique

Dos and don'ts of an interview preparing for an interviewPresenting documents

Language used in an interview

Practical: Based on the theory units: Marks: 10

Reference Books:

- Sethi, Anjanee&BhavanaAdhikari. *Business Communication*. New Delhi: TataMcGrawHill
- Tickoo, Champa& Jaya Sasikumar. *Writing with a Purpose*. NewYork: OUP, 1979.
- Sonie, Subhash C. *Mastering the Art of Effective Business Communication*. New Delhi: Student Aid Publication,2008.
- Herekar, Praksh. *Business Communication.* Pune: Mehta Publications, 2007.
- Herekar, Praksh. *Principals of Business Communication.*Pune: Mehta Publi. 2003

Pattern of a Question paper
Business Communication –I
Semester –I paper-I

Time : 2 hours	**Total Marks:40**
Q.1 Do as directed questions items on unit 1 to be asked	10 (10out of 12)
Q.2 Write a letter of application	10
OR	
Draft a CV / Resume for a particular post	10
Q.3 Present a given information or a data using a table/ chart/piedigaram,etc. (any one diagram to be drawn)	10
Q.4 Fill in the blanks in the given interview	10

Practical Evaluation:

Oral and presentation based on units prescribed	**10 Marks**

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester – I
Horticulture and Floriculture

Paper – II: Fundamental of Soil Science
Distribution of Workload:

Theory : 04 lectures perweek
Practical : 02 lectures per week per batch

Total Marks: 50 Marks (Theory 40 + Practical 10)

Objectives:

- To study the fundamentals of soil and various types, classification of soils.
- Tounderstandthe formation of soil

Unit –I:Soil Science: Introduction

Soil Science: Introduction, soil forming factors, parent material, characteristics of soil, Classification, Organic matter and humus.
Minerals: Definition, and classification mineral composition of rocks, physical properties of minerals chemical properties, silicate class, carbonate class, sulphide, phosphate, element class, organic halide oxide class.

Unit –II:Soil Colour and Structure

Soil colour-definition, significance**,** Munsell soil colour chart.
Factors influencing soil colour- parent material, soil moisture and organic matter
Soil structure: definition, classification, clay prism like structure, and Genesis.
Factors influencing soil structure.
Soil consistence, plasticity, Atterberg's limits

Unit –III:Soil fertility

Soil fertility: soil fertilization light and Co2 limitation, soil depletion, humus and humification. Benefits of soil organic matter, and humus, Biomass, sources chemical, Biochemical conversion Environmental impact

Unit –IV:Soil P^H

Soil pH: Importance, Nutrient availability in relation to soil P^H, factors affecting soil P^H, soil life and soil P^H and plant diseases, quick lime and slaked lime, reducing soil P^H, example and plant books.
Soil conversion: Erosion prevention salinity management soil micro-organisms mineralization.

Reference Books:

1. Boul S.W., Hole R.D., McCracken and Southard R.J. (1998).*Soil Genesis and Classification* Fourth Ed PanimaPublishingCorporation, New Delhi.
2. .Baver, L.D. Gardener, W.H. and gardener W.R.(1976) *Soil Physics* Wiley Eastern Ltd, New Delhi
3. Biswas, T.D. and Mukherjee, S.K. (2006) *Text book of soil science*. Tata McGraw Hill Publishing Co. Ltd, New Delhi
4. Brady, N.C. and Weil, R.R. (2016) *The Nature and Properties of Soils*, 15th edition Publisher Prentice Hall ofIndia Pvt. Ltd, M-97, Connaught Circus, New Delhi
5. Das, D.K. (2011) *Introductory Soil Science*, 3rd revised and Enlarged Ed, Kalyani Publisher, Ludhiana
6. Mehra R.K. (2004) *Text book of Soil Science*, ICAR, New Delhi
7. ISSS (2009) *Fundamentals of Soil Science*, Div. of Soil Science, IARI, New Delhi
8. Chopra S.L. and Kanwar, J.S. (1991) *Analytical Agricultural Chemistry*, Kalyani Publisher, Ludhiana
9. Jackson, M.L. (1973)*Soil Chemical Analysis*, Prentice Hall of India, Pvt. Ltd, New Delhi
10. Piper, C.S. (1950) *Soil and Plant Analysis*. .Hans Publications, Bombay

Fundamental of Soil Science

(Practical)

Marks: 10

Objectives:

• To study the different soil sample analysis.

1. Determination of Water holding capacity of soil.
2. Study of soil profile in field.
3. Study of soil sampling tools.
4. Collection of representative soil sample, its processing and storage.
5. Study of soil forming rocks and minerals.
6. Determination of soil P^H and electrical conductivity.
7. Determination of soil colour.
8. Estimation of organic matter content of soil.

Scheme of Internal Practical Evaluation	**10 marks**
1) Submission of Record book	5marks
2) Viva–Voce	5marks

Reference Books:

1. Principle and Practices of soil science – R E White.
2. Soil science & management - Book by Edward J. Plaster.
3. Soil Minerals by Trotter Brown, Publisher: Zealand Publishing House
4. Essential Soil Science: A Clear and Concise Introduction to Soil Science ByGeetaPuri and Mark Ashman.

SHIVAJI UNIVERSITY, KOLHAPUR

B. Voc. Part – I, Semester -I

Horticulture and Floriculture

Paper - III: Fundamentals of Agronomy
Total Workload: 04 lectures per week

Distribution of Workload:
Theory: 04 lectures per week.
Total Marks: 50 Marks.

Objectives:
• ToacquireknowledgeofAgronomy.
• To know the importance of seed, plant nutrients and irrigation to crops.

Unit – I: Introduction to Agronomy
Agronomy and its scope. Classification of Crops or different basis. Agronomic classification of crops. Importance of Indian Agriculture. Commercial agriculture, sustainableagriculture seasons in India.

Unit - II:Crop Weed Management
Weeds- importance, classification, crop weed competition, concepts of weed managementprinciplesand methods, herbicides- classification, selectivity and resistance, allelopathy.
Growth and development of crops, factors affecting growth and development, plant ideotypes,crop rotation and its principles, adaptation and distribution of crops, crop managementtechnologies in problematic areas, harvesting and threshing of crops

Unit -III:Soil and Water Conservation
Principles of Soil Erosion, Water Erosion, Wind Erosion, Soil and Water Conservation Measures.

Unit -IV:Irrigation and Water Management
Importance of water in crop production. Soil Moisture constants. Estimation ofpotential evapo-transpiration and consumptive use. Water requirement of crops and factorsaffecting it.Approaches of irrigation scheduling. Systems and methods of irrigation – drip,sprinkler and mist Irrigation. Quantity and quality of irrigation. Measurement of irrigationwater. Elementary idea of drainage on farms.

Reference Books:

1. ICAR. (2010). *Handbook of Agriculture* (6th edition), Indian Council of Agricultural Research, New Delhi.

2. Panda, S.C. (2012). *Modern Concepts and Advance Principles in Crop Production*. Agrobios (India), Jodhpur
3. Balasubramaniyan, P. and Palaniappan, S.P.(2016). *Principles and Practices of Agronomy*(2nd edition), Agrobios (India), Jodhpur
4. Reddy, T.Yellamanda and Reddy, G.H. Sankara. (2016). *Principles of Agronomy* (2nd edition) ,Kalyani Publishers, Ludhiana
5. Reddy, S.R. (2012). *Principles of Crop Production* (4th edition), Kalyani Publishers, Ludhiana.
6. Tomar, Gajendra Singh. (2010). *Agronomy Basics and Applied*. Satish Serial Publishing House, Azadpur, New Delhi.

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester -I
Horticulture and Floriculture

Paper-IV:Fundamentals of Horticulture
Total Workload: 04 lectures per week

Distribution of Workload:
Theory: 04 lectures per week.
Total Marks: 50 Marks.

Objectives:
• To understand vegetative propagation.
• To know the various operations carried out in field.

Unit - I: Classification of Horticulture
Horticulture- its definition and branches, Importance and scope, Selection of site for fruit growing, Horticultural and Botanical classification, Fruit Zones of Maharashtra.

Unit -II: Indian Horticulture
Indian Horticulture, various crops taken in India. Climate & Weather Requirement & there economic importance. Geographical Importance & Topographical change.

Unit -III: Pomology & Floriculture
Pomology refers to cultivation of fruits & Floriculture refers to cultivation of flowers. The method of cultivation & intercultural operations & tillage practices.

Unit – IV : Fertility Management in Horticultural Crops
Weedmanagement, fertility management in horticultural crops-manures and fertilizers, different methods ofapplication, cropping systems, intercropping, multi-tier cropping, mulching– objectives, types meritsand demerits, Classification of bearing habits of fruit trees, factors influencing the fruitfulness andunfruitfulness. Principles of organic farming

Reference Books:

1. Chadha,K.L.(ICAR),(2002). *Handbook of Horticulture*, ICAR, NewDelhi
2. D.K. Salunkhe and S.S. Kadam, (2013). *A handbook of Fruit Science and Technology*. CRC Press.
3. DenisenE.L.,(1957). *Principles of Horticulture*. Macmillan Publishing Co., New York.
4. Edmond,J.B, Sen,T.L, Andrews,F.S and Halfacre R.G., (1963). *Fundamentals of Horticulture*. Tata McGraw Hill Publishing Co., New Delhi.
5. Gardner/Bardford/Hooker. J.R., (1957). *Fundamentals of Fruit Production.* Mac Graw Hill Book Co., New York.

6. Jitendra Singh, (2002). *Basic Horticulture*. Kalyani Publishers, Hyderabad.
7. K.V.Peter, (2009). *Basics Horticulture.* New India Publishing Agency
8. Kausal Kumar Misra and Rajesh Kumar, 2014. *Fundamentals of Horticulture*. Biotech Books.
9. Kumar, N., (1990). *Introduction to Horticulture*. Rajyalakshmi publications, Nagarcoil, Tamil Nadu
10. NeerajPratap Singh, (2005). *Basic concepts of Fruit Science* 1stEdn. IBDC Publishers.
11. Prasad and Kumar, (2014). *Principles of Horticulture* 2ndEdn. Agrobios (India).
12. S. Prasad and U. Kumar, (2010). *A handbook of Fruit Production*. Agrobios (India).

e-reading: **http://ecourses.iasri.res.in/**

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester -I
Horticulture and Floriculture

Paper-V:Production Technology of Cut Flowers
Total Workload: 04 lectures per week

Distribution of Workload:
Theory: 04 lectures per week.
Total Marks: 50 Marks.

Objective:
• To impart basic knowledge about the importance and production technology of cut flowers grown in India.

Unit - I: Introduction to Cut Flowers
Scope of cut flowers in global trade, Global Scenario of cut flowerproduction, Varietal wealth and diversity,area under cut flowers andproduction problems in India- Patent rights, nursery management, mediafornursery, special nursery practices

Unit - II: Cultivation Methods
Growing environment, open cultivation, protected cultivation, soilrequirements, artificial growing media,soil decontamination techniques,planting methods, influence of environmental parameters, light,temperature, moisture, humidity and CO_2 on growth and flowering.

Unit - III:Flower production
Flower production – water and nutrient management, fertigation, weed management, rationing, training andpruning, disbudding, special horticultural practices, use of growth regulators, physiological disorders andremedies, IPM and IDM, production for exhibition purposes.

Unit - IV:Harvesting Techniques
Cut flower standards and grades, harvest indices, harvesting techniques, post-harvest handling, Methods ofdelaying flower opening, Pre-cooling, pulsing, packing, Storage and transportation, marketing, exportpotential,institutional support, Agri Export Zones.

Reference Books:

1. Arora JS.,(2006). *Introductory Ornamental horticulture.* Kalyani
2. Bhattacharjee SK. (2006). *Advances in Ornamental Horticulture*. Vols. I-VI.Pointer Publication.
3. Bose TK & Yadav LP. (1989). *Commercial Flowers.* NayaProkash.
4. Bose TK, Maiti RG, Dhua RS & Das P. (1999). *Floriculture and Landscaping.* NayaProkash.
5. Chadha KL &Chaudhury B. (1992). *Ornamental Horticulture in India*.ICAR.

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester -I
Horticulture and Floriculture

Paper-VI: Laboratory work - Agronomy (Practical)
Total Workload: 04 lectures per week

Distribution of Workload:
Practical - 04 lectures per week per Batch
Total Marks: 50 Marks. (Practical 50)

Objectives:

•To analysis, learn & study importance and types of soil

Practicals:

1. Soil and Water P^H calculation by using P^H paper and universal indicator/meter.
2. Layout making.
3. Seed calibration & sowing.
4. Seed germination and viabilities test.
5. Intercultural operation of various crops.
6. Types of fertilizers.

Scheme of practical evaluation

Internal practical evaluation	**50marks**
i) Submission of practical record book	20marks
ii) Submission of visit report	15marks
iii) Viva–Voce	15marks

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SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester -I
Horticulture and Floriculture

Paper-VII: Laboratory work -Horticulture (Practical)
Total Workload: 04 lectures per week

Distribution of Workload:
Practical - 04 lectures per week per Batch
Total Marks: 50 Marks. (Practical 50)

Objectives:

•To make perfect techniques for learners& study horticultural practices & cultivation methods.

Practicals:

1.Prepare a chart of nutritional importance of plants.
2.Major horticultural plants in local area.
3. Plant Pruning Techniques.
4. Vegetative propagation by Layering.
5. Vegetative propagation by Grafting and Budding.
6. Layout making.
7. Intercultural operation of various crops.
8. Study of weather and weather forecasting.

Scheme of practical evaluation

Internal practical evaluation	**50marks**
i) Submission of practical record book	20marks
ii) Submission of visit report	15marks
iii) Viva–Voce	15marks

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SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester -I
Horticulture and Floriculture

Paper-VIII: Laboratory work -Production Technology of Cut Flowers (Practical)
Total Workload: 04 lectures per week

Distribution of Workload:

Practical - 04 lectures per week per Batch
Total Marks: 50 Marks. (Practical 50)

Objectives:

•To buildthe knowledge about the importance and production technology of cut flowers.

Practical

1. Botanical description of varieties of cut flower.
2. Propagation techniques of cut flower.
3. Mist chamber operation for cut flower growing.
4. Training and pruning techniques, practices in manuring for cut flower.
5. Drip and fertigation, foliar nutrition, growth regulator application in cut flower.
6. pinching, disbudding, staking, harvesting techniques, post-harvest handling of cut flower.
7. Cold chain, project preparation for regionally important cut flowers.
8. Visit tocommercial cut flower units.

Scheme of practical evaluation

Internal practical evaluation	**50marks**
i) Submission of practical record book	20marks
ii) Submission of visit report	15marks
iii) Viva–Voce	15marks

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SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester -I
Horticulture and Floriculture

Paper-IX: Project/ Field Visit/ Crop Museum/ Nursery Visit/ Agriculture Mall Visit
Total Marks: 50 Marks.

Some specimen of modified crop varieties should be collected and data of the relevant species including cultivation and harvestingtechniques are to collected and displayed with proper scientific preservation and knowledge.This work should be completed within a span of year.

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SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester – II
Horticulture and Floriculture

Paper – X: Business Communication-II
Total Workload: 06 lectures per week

Distribution of Workload:

Theory:	04 lectures perweek
Practical:	02 lectures per week per batch

Total Marks: 50 Marks (Theory 40 + Practical 10)

Unit –I:Group Discussion
Preparing for a Group DiscussionInitiating a DiscussionEliciting Opinions, views etc. Expressing Agreement /DisagreementMaking Suggestions; Accepting and Declining SuggestionsSummingup**.**

Unit –II:Business Correspondence
WritingMemos, e-mails, complaints,inquiries,etc.
Inviting Quotations Placing Orders, Tenders, etc

Unit –III:English for Negotiation
Business Negotiations Agenda for Negotiation Stages of Negotiation

Unit –IV: English for Marketing
Describing/ExplainingaProduct/Service Promotion of aProduct
Dealing/ bargaining with Customers
MarketingaProduct/Service:UsingPamphlets,Hoardings,
Advertisement, Public Function/Festival

Practical: Based on the theory units: Marks: 10

Reference Books:

· Herekar, Praksh (2007). *Business Communication.*Mehta Publications, Pune.
· Herekar,Praksh (2003).*PrincipalsofBusinessCommunication.*Mehta Publications, Pune
· John, David. *Group Discussions.*Arihant Publications, New Delhi.
· Kumar,Varinder(2000).*BusinessCommunication.*KalyaniPublishers,NewDelhi.
· Pardeshi,P.C.(2008). *ManagerialCommunication.*NiraliPrakashan,Pune.
· Pradhan, N. S.(2005).*Business Communication.* Himalaya Publishing House, Mumbai.
· Rai, Urmila& S. M. Rai.(2007). *BusinessCommunication.*Himalaya Publishing House, Mumbai
· Sethi,A.&B. Adhikari.*BusinessCommunication*.TataMcGrawHill.NewDelhi.
· Sonie,SubhashC.(2008) *MasteringtheArtofEffectiveBusinessCommunication*, Student Aid Publication,NewDelhi.
· Tickoo, Champa& Jaya Sasikumar (1979).*Writing with a Purpose*. OUP,New York.
· Whitehead,Jeoffrey&DavidH.Whitehead.(1996) *BusinessCorrespondence*.Wheeler Publishing, Allahabad.

Pattern of a Question paper
Business Communication –I
Semester –I paper-I

Time : 2 hours	**Total Marks:40**
Q.1 Do as directed questions items on unit 1 to be asked	10 (10out of 12)
Q.2 Write a letter of application	10
OR	
Draft a CV / Resume for a particular post	10
Q.3 Present a given information or a data using a table/ chart/piedigaram,etc. (any one diagram to be drawn)	10
Q.4 Fill in the blanks in the given interview	10

Practical Evaluation:

Oral and presentation based on units prescribed	**10 Marks**

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester – II
Horticulture and Floriculture

Paper – XI: Fertilizer &Pesticide : Sustainable approaches
Total Workload: 06 lectures per week

Distribution of Workload:

Theory:	04 lectures perweek
Practical:	02 lectures per week per batch

Total Marks: 50 Marks (Theory 40 + Practical 10)

Objectives:
· To understand information regarding importance & uses of fertilizers & pesticides.

Unit –I:Fertilizers
Introduction, Need and types of fertilizers, uses. Basic chemistry of fertilizers.
National and international status and approaches of development of fertilizers.

Unit –II:Biofertilizer
Methods of development of biofertilizers technology transfer projects fordevelopment of biofertilizers. Types of biofertilizer.

Unit –III:Pesticides
Introduction, types of pesticides status, and approaches. Biopesticides: Introduction Advantage, types of Biopesticides.
Trends and opportunities: Agrochemical management and manufacturing.

Unit –IV:Trends and opportunities
Agrochemical management and manufacturing. Various agrochemical brands, classification, types & uses. Equipments used for using chemicals which includes in liquid, soil application, water soluble, powder forms.

Reference Books:

- Havlin , John L. (2004). *Soil Fertility and Fertilizers: An Introduction to Nutrient Management* Published by Prentice Hallof India, Pvt. Ltd NewDelhi
- ZhongqiHeandHailin Zhang (2016). *Applied Manure and Nutrient Chemistry for Sustainable Agriculture and Environment* Paperback – Import. Springer.
- ICAR Handbook of manures and fertilizers (1971)
- Tisdale, S. L. and Nelson, W. L. and Beaqton, J. D. (2010). *Soil Fertility and fertilizers*. 7th Ed. Macmillan Publishing Company, 445 Hutchinson Avenue, Columbus.
- Yawalkar, K. S. , Agarwal, J. P. and Bokde, S. (1967). *Manures and Fertilizers*. Agri-Horticultural Publishing house, Nagpur.

Fertilizers and Pesticides: sustainable organic approaches (Practical) Marks: 10

Objectives:

· To familiarize the students with biofertilizersand Biopesticides.

Practicals:

1.Studying types of Fertilizers.
2.Chemistry of fertilizers.
3.Biofertilizers: Types Development.
4.Survey of availability of pesticides in Market.
5.Biopesticides: Types of biopesticides.

Scheme of Internal Practical Evaluation	**10 marks**
1) Submission of Record book	5marks
2) Viva–Voce	5marks

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester – II
Horticulture and Floriculture

Paper – XII: Principles of Genetics and Cytogenetics
Total Workload: 04 lectures per week

Distribution of Workload:
Theory: 04 lectures per week.
Total Marks: 50 Marks.

Objectives:
· To understand Genetics variation in plants.

Unit –I:History of Genetics
History of genetics, theories and hypothesis. Relation of Genetic with other fields of science, scope andImportance

Unit –II: Cell Reproduction
Ultra structure of cell, cell organelles and their functions.Study of Chromosome structure, morphology, number, types, karyotypes andideogram. Cellreproduction, mitosis, meiosis and its significance.Gametogenesis and syngamy in plants.

Unit –III:Mendel's contribution
Mendel's contribution -Mendel's law of Segregation, monohybrid. Mendel's Laws of inheritance : Di & tri-hybrid ratio, deviation from Mendelian inheritance. pleiotropy, threshold characters, co-dominance, penetrance and expressivity.Chromosome theory of inheritance,gene interaction.

Unit –IV:Gene Interactions
Gene interactions different types with example and test cross ratio. Types of gene action, Multiple Alleles-its characteristics, pseudoalleles. Quantitativeinheritance linkage and crossing over, sex linked inheritance and characters. Cytoplasmic inheritanceand maternal effects.Chemical basis of heredity, structure of DNA and its replication.

Reference Books:

- Gupta, P.K. (1985).*Cytology, genetics and cytogenetics*. Rastogi Publication, India.
- Shukla. (2001). *Cell Biology* Dominant publishers, New Delhi
- Norman,V. Rothwell. *Understanding Genetics* (IV Ed.). Oxford University Press, Oxford.
- Singh B D. *Fundamentals of Genetics*. Kalyani Publishers, New Delhi
- Srivastava&Tyagi. *Selected Problems in Genetics* (Vol.1-3). Anmol Publications Pvt. Ltd., New Delhi
- Khanna VK. *Genetics–Numerical Problems*. Kalyani Publishers, New Delhi.

e-reading: http://ecourses.iasri.res.in/

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester – II
Horticulture and Floriculture

Paper – XIII:Growth and Development of Horticultural Crops
Total Workload: 04 lectures per week

Distribution of Workload:
Theory: 04 lectures per week.
Total Marks: 50 Marks.

Objectives:
•To develop understanding of growth and development of horticultural crops which have implications in their management.

Unit –I:Growth and Development
Growth and development-definitions, components, photosynthetic productivity, Canopy photosynthesis and productivity, leaf area index (LAI) - optimum LAI in horticultural crops, canopy development; different stages of growth, growth curves, Crop development and dynamics (Case studies of annual/perennial horticultural crops), growth analysis inhorticultural crops.

Unit –II: Role ofCrop Growth
Plant bio-regulators- auxin, gibberellin, cytokinin, ethylene inhibitors andretardants, basic functions, biosynthesis, role in crop growth and development, propagation,flowering, fruit setting, fruit thinning, fruit development, fruit drop, and fruit ripening.

Unit –III:Flowering
Flowering-factors affecting flowering, physiology of flowering, photoperiodism-long day, short day and day neutral plants, vernalisation and its application in horticulture, pruning andtraining physiological basis of training and pruning-source and sink relationship, translocation of assimilates.

Unit –IV: Seed Development
Physiology of seed development and maturation, seed dormancyand bud dormancy, causes and breaking methods in horticultural crops. Physiology of fruitgrowth and development, fruit setting, factors affecting fruit set and development,physiology of ripening of fruits-climatic and non-climacteric fruits. Physiology of fruitsunder post-harvest storage**.**

Reference Books:

- Basra, A. S. (2004). *Plant Growth Regulators in Agriculture & Horticulture*. HAWARTH Press. New York.
- Delvin, R.M .(1986). *Plant Physiology*. CBS. Delhi.
- Richard, N. Arteca. (2004). *Plant Growth Substances*. CBS. New Delhi.
- Salisbulry.(2007). *Plant Physiology*.CBS. New Delhi.
- Taiz, L. (2010).*Plant Physiology*. SINAUR. USA.
- Zeiger. (2003).*Plant Physiology*. PANIMA.New Delhi.

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester – II
Horticulture and Floriculture

Paper – XIV:Nursery Management
Total Workload: 04 lectures per week

Distribution of Workload:
Theory: 04 lectures per week.
Total Marks: 50 Marks.

Objectives:
·To study aims, objectives & importance of Nursery Management.

Unit –I:Introduction to Horticulture Nursery
Nursery Management, plant propagation methods, types, classification. Vegetative propagation methods. Tray cultivation and open farm growing bags. Growing of commercially crops which are available in local market

Unit –II:Plant Nutrition
Plant Nutrition Management in Nursery, plant protection in Nursery Management, Management practices in Horticulture. Nutrional importance of major and micro nutrients fornursery plantation. Types and uses for various chemical & organic fertilizers.

Unit –III:Mass Production
Mass Production of Nursery plants, Ornamental Horticulture Nursery. Commercialmass production of crops. Market values of nursery plants. Study of indoor & outdoor plant. Methods of growing nursery in/ out door plants

Unit –IV:Government Regulations
Government regulation norms and policies in Horticulture NurseryManagement.Marketing planning for nursery products. Plant Library Concepts andOperations Economics. Methods and planning for Proper Nursery according to GovernmentPolicy.

Reference Books:

- BhimrajBhujbal (ed.). (2012). *Resource book on Horticulture Nursery Management*, YCMOU, NAIP, ICAR
- Kumar, V. (2011). *Nursery and Plantation Practices in Forestry*. Scientific Publisher, Jodhpur
- Landis, T.D., Tinus, R.W. and Barnett, J.P. (1999). *The Container Tree Nursery Manual: Seedling Propagation*. Agriculture Handbook, 674.Washington, DC: U.S. Department of Agriculture, Forest Service
- Rahudkar W.B., Bhujbal BG, MadhuriSonawane, Hemraj Rajput, (2010). *Horticulture Nursery Management,* YCMOU, Textbook Publication No. AGR 227.
- Randhawa G.S., A.Mukhopadhyay (2001). *Floriculture in India*. Book published by Allied Publishers Limited, New Delhi
- Roshetko, J.M., Tolentino, E.L., and Other (2010). *Tree Nursery Sourcebook - Options in Support of Sustainable Development*. World Agroforestry Center-ICRAF and Winrock International. Bogor, Indonesia

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester -II
Horticulture and Floriculture

Paper-XV: Laboratory Work- Principles of Genetics and Cytogenetics
Total Workload: 04 lectures per week

Distribution of Workload:
Practical - 04 lectures per week per Batch
Total Marks: 50 Marks. (Practical 50)

Objectives:
• To understand Genetics variation in plants

Practicals:
1. Study of fixatives and stains.
2. Preparation of microscopic slide of mitosis-onion root tips and identification.
3. Methods of finding out the gametes and gameticrecombinations.
4. Interaction of genes- I, Without modification of F2 ratio, Complementary.
5. Gene interactions-II, Supplementary, Epistatis, & Inhibitory.
6. Gene interactions-III, Additive, Duplicate and Lethal.
7. Study of linkage of genes.
8. Induction of polyploidy using colchicines, Induction of mutation by using Chemicals

Scheme of practical evaluation

Internal practical evaluation	**50marks**
i) Submission of practical record book	20marks
ii) Submission of visit report	15marks
iii) Viva–Voce	15marks

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SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester -II
Horticulture and Floriculture

Paper-XVI: Laboratory Work- Growth and Development of Horticultural Crops
Total Workload: 04 lectures per week

Distribution of Workload:
Practical - 04 lectures per week per Batch
Total Marks: 50 Marks. (Practical 50)

Objectives:
- To know the different stages of growth in plants.

Practicals:
1. Understanding dormancy mechanisms in seeds, tubers and bulbs and stratification of seeds, tubers and bulbs,
2. Visit to arid, subtropical and temperate horticultural zones to identify growth and development patterns,
3. Techniques of growth analysis, evaluation of photosynthetic efficiency under different environments,
4. Study of growth regulator functions, hormone assays,
5. Understanding ripening phenomenon in fruits and vegetables,
6. Study of impact of physical manipulations on growth and development,
7. Study of chemical manipulations on growth and development,
8. Understanding stress impact on growth and development

Scheme of practical evaluation

Internal practical evaluation	**50marks**
i) Submission of practical record book	20marks
ii) Submission of visit report	15marks
iii) Viva–Voce	15marks

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SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester -II
Horticulture and Floriculture

Paper-XVII: Laboratory Work- Nursery Management
Total Workload: 04 lectures per week

Distribution of Workload:
Practical - 04 lectures per week per Batch
Total Marks: 50 Marks. (Practical 50)

Objectives:
- To understand planting material as an initial investment is a well realized factor for persons engaged in Horticulture field.

Practicals:
1.Plant propagation by seeds
2.Grafting, budding, air layering
3.Shade net development and management.
4.Ornamental plant development by cutting method
5. Vegetable seedling development
6. Identification of garden tools/ implements.
7. Potting and repotting techniques.
8. Preparation of seed bed/nursery bed.

Scheme of practical evaluation

Internal practical evaluation	**50marks**
i) Submission of practical record book	20marks
ii) Submission of visit report	15marks
iii) Viva–Voce	15marks

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SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester -II
Horticulture and Floriculture

Paper-XVIII: Project/ Field Visit/ Crop Museum/ Nursery Visit/ Agriculture Mall Visit
Total Marks: 50 Marks.

· Soil testing lab project, Green houses, Polythene house, Drip irrigationinstallation.
· Some specimen of modified crop varieties should be collected and data of the relevant species including cultivation andharvesting techniques are to collected and displayed with proper scientificpreservation and knowledge. This work should be completed within a span of year.

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SHIVAJI UNIVERSITY, KOLHAPUR

Accredited By NAAC with 'A' Grade

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

Food Processing Technology

Part I- Sem. I & II

CBCS PATTERN
Syllabus to be implemented from

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

SHIVAJI UNIVERSITY, KOLHAPUR
STRUCTURE AND SYLLABUS OF B.VOC.

Bachelor of Vocation (B.Voc.) – Food Processing Technology

TITLE : B.Voc. (Food Processing Technology)
Syllabus (Semester Pattern)
Under Faculty of Interdisciplinary Studies

YEAR OF IMPLEMENTATION : Syllabus will be implemented from August, 2020

DURATION : B. Voc. Part I, II and III (ThreeYears)
B. Voc. Part I - Diploma (One Year)
B. Voc. Part II - Advanced Diploma (Second Year)
B. Voc. Part III – Degree (ThirdYear)

PATTERN OF EXAMINATIOM : Semester Pattern

- **Theory Examination** - At the end of semester as per Shivaji University Rules
- **Practical Examination** - i) In the1st, 3rdand 5thsemester of B.Voc. there will be internal assessment of practical record, related report submission and project reports at the end of semester
  ii) In the second semester of B. Voc. I, there will be internal practical examination at the end of semester
  iii) In the 4thand 6thsemester of B. Voc. there will be external practical examination at the end of semester

MEDIUM OF INSTRUCTION : English/ Marathi.

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.

SCHEME OF EXAMINATION :

A) THEORY-

- The theory examination shall be at the end of the each semester.

• All the general theory papers shall carry 40marks and all vocational theory papers shall carry 50marks.

• 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 marks.

ii) Students will have to solve any five questions

Que. No. 1 : Short answer type question with internal choice (Two out of Three)

Que. No. 2 to Que. No. 6: Long answer type questions.

Que. No. 7 : Short Notes with internal choice (Two out of Three)

B) PRACTICALS :

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

Standard of Passing:

As per the guidelines and rules for B. Voc. (Attached Separately – Annexure I)

Eligibility Criteria:

1. The Eligibility for admission is 10+2 or equivalent, in any stream (Arts/Commerce/Science) from any recognized board or University.
2. The candidates after with 10+2 year ITI course/ in any branch/trade also eligible for course.
3. The candidates graduate from any faculty or engineering degree/diploma holders are also eligible.

Structure of the Course:

B. Voc. –I (Diploma) Semester –I

Sr. No.	Paper No.	Title	Theory/ Practical /Project	Marks (Total)	Distribution of Marks		Credits	
					Theory	Practical	Theory	Practical
	A	**General Education Components**						
1	I	Business Communication- I	Theory/ Practical	50	40	10	3	2
2	II	Fundamentals of Food Science - I	Theory/ Practical	50	40	10	3	2
	B	**Skill Development Components**						
3	III	Principles of Food Preservation	Theory	50	50	--	3	--
4	IV	Fundamentals of Food and Nutrition	Theory	50	50	--	3	--
5	V	Agro Processing - I	Theory	50	50	--	3	--
	C	**Laboratory Work**						
6	VI	Principles of Food Preservation	Practical	50	--	50	--	3
7	VII	Fundamentals of Food and Nutrition	Practical	50	--	50	--	3
8	VIII	Agro Processing	Practical	50	--	50	--	3
	D	**Field Work**						
9	IX	Project/ Industrial Visit /Nursery visit/ Study Tour		50	--	50	--	2
	E	**Non Credit Courses**						
		Democracy, Elections and Good Governance	Theory	50	50	--	--	--

General Education Components: The subject (Department/Discipline) in which a student takes admission

Skill Development Components:The subject closely related to a student's major subject

Non-Credit compulsory Courses**:** Six courses are of general nature and are compulsory

B. Voc. –I (Diploma) Semester –II

Sr. No.	Paper No.	Title	Theory/ Practical /Project	Marks (Total)	Distribution of Marks		Credits	
					Theory	Practical	Theory	Practical
	A	**General Education Components**						
1	X	Business Communication-II	Theory/ Practical	50	40	10	3	2
2	XI	Fundamentals of Food Science – II	Theory/ Practical	50	40	10	3	2
	B	**Skill Development Components**						
3	XII	Food Biochemistry	Theory	50	50	--	3	--
4	XIII	Food Microbiology	Theory	50	50	--	3	--
5	XIV	Agro Processing – II	Theory	50	50	--	3	--
	C	**Laboratory Work**						
6	XV	Food Biochemistry	Practical	50	--	50	--	3
7	XVI	Food Microbiology	Practical	50	--	50	--	3
8	XVII	Agro Processing	Practical	50	--	50	--	3
	D	**Field Work**						
9	IX	Project/ Industrial Visit /Nursery visit/ Study Tour		50	--	50	--	2
	E	**Non Credit Courses**						
		Democracy, Elections and GoodGovernance	Theory	50	50	--	--	--

General Education Components: The subject (Department/Discipline) in which a student takes admission

Skill Development Components:The subject closely related to a student's major subject

Non-Credit compulsory Courses**:** Six courses are of general nature and are compulsory

Scheme of Teaching: B. Voc. – Part I (Diploma) Semester – I

Sr. No.	Paper No.	Title	Distribution of workload (Per Week)		
			Theory	Practical	Total
1	I	Business Communication- I	4	2	6
2	II	Fundamentals of Food Science – I	4	2	6
3	III	Principles of Food Preservation	4	-	4
4	IV	Fundamentals of Food and Nutrition	4	-	4
5	V	Agro Processing – I	4	-	4
6	VI	Laboratory Work- Principles of Food Preservation	-	4	4
7	VII	Laboratory Work- Fundamentals of Food and Nutrition	-	4	4
8	VIII	Laboratory Work-Agro Processing-I	-	4	4
9	IX	Project/ Industrial Visit	-	-	-
		Democracy, Elections and GoodGovernance	-	-	-
			20	16	36

Scheme of Teaching: B. Voc. – Part I (Diploma) Semester – II

Sr. No.	Paper No.	Title	Distribution of workload (Per Week)		
			Theory	Practical	Total
1	X	Business Communication- II	4	2	6
2	XI	Fundamentals ofFood Science – II	4	2	6
3	XII	Food Biochemistry	4	-	4
4	XIII	Food Microbiology	4	-	4
5	XIV	Agro Processing – II	4	-	4
6	XV	Laboratory Work- Food Biochemistry	-	4	4
7	XVI	Laboratory Work- Food Microbiology	-	4	4
8	XVII	Laboratory Work- Agro Processing-II	-	4	4
9	XVIII	Project/ Industrial Visit.	-	-	-
		Democracy, Elections and GoodGovernance	-	-	-
			20	16	36

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

Eligibility for Faculty **:** M. Sc. (Food Science and Nutrition / Food Processing/Food Science and Technology/Home-Science/ FoodScience and QualityControl with NET / SET

M. Tech. (Food Tech./Food processing)

M. A (English) with NET/SET for Business Communication

Eligibility for Laboratory Assistant: B. Tech (Food Tech./ Food processing)/B. Sc. (Food Science and Nutrition / Food Processing/ FoodScience and Technology/Home-Science/ Food Science andQuality Control)/ B.A. Home Science.

Staffing Pattern **:** In 1st Year of B. Voc. - 1 Full Time and 1 Part Time Lecturer and 1 CHB Lecturer for Business Communication

Laboratory Assistant **:** For 1st Year of B. Voc. - 1 Part-time

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SHIVAJI UNIVERSITY, KOLHAPUR

B. Voc. Part – I, Semester – I

Food Processing Technology

Paper – I: Business Communication-I

Distribution of Workload: **Total Marks**: 50 Marks

Theory : 04 lectures per week Theory 40M

Practical : 02 lectures per week per batch Practical 10M

Total Workload: 06 lectures per week of 60min.

Unit–I: Use of English in Business Environment.

BusinessVocabulary:Vocabularyforbanking,marketingandformaintaining Publicrelations.

What is a sentence? Elements of a sentence.

Types of sentence: Simple, compound, complex

Unit- II: Writing a Letter of Application and CV/Resume

Structureofaletterofapplicationforvariousposts CV/Resume and itsessentials

Unit - III: Presenting Information / Data.

Presentinginformation/datausinggraphicsliketables,pie charts,treediagrams, bar diagrams, graphs, flowcharts

Unit - IV: Interview Technique

Dos and don'ts of an interview preparing for an interviewPresenting documents

Language used in an interview

Practical: Based on the theory units: Marks: 10

Reference Books:

- Sethi, Anjanee&BhavanaAdhikari. *Business Communication*. New Delhi: TataMcGrawHill
- Tickoo, Champa& Jaya Sasikumar. *Writing with a Purpose*. NewYork: OUP, 1979.
- Sonie, Subhash C. *Mastering the Art of Effective Business Communication*. New Delhi: Student Aid Publication,2008.
- Herekar, Praksh. *Business Communication.* Pune: Mehta Publications, 2007.
- Herekar, Praksh. *Principals of Business Communication.*Pune: Mehta Publi. 2003

Pattern of a Question paper
Business Communication –I
Semester –I paper-I

Time : 2 hours **Total Marks:40**

Q.1 Do as directed questions items on unit 1 to be asked 10 (10out of 12)

Q.2 Write a letter of application 10

OR

Draft a CV / Resume for a particular post 10

Q.3 Present a given information or a data using a table/ chart/piedigaram,etc. 10
(any one diagram to be drawn)

Q.4 Fill in the blanks in the given interview 10

Practical Evaluation:

Oral and presentation based on units prescribed **10 Marks**

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester – I
Food Processing Technology
Paper – II: Fundamentals of Food Science - I

Distribution of Workload:
Theory : 04 lectures per week
Practical : 02 lectures per week per batch
Total Workload: 06 lectures per week of 60min.

Total Marks: 50 Marks
Theory 40M
Practical 10M

Objectives:

- To understand the basic concept, functions, and classification of food.
- Tofamiliar with different methods of cooking

Unit–I: Introduction to food science

Concept of food, food science, Objectives of food science, Functions of food.

Unit –II: Classification of food

According to food science basic five food groups, Selection of food

Unit–III: Methods of cooking

Traditional cooking methods, Modern cooking methods, Objectives and importance of cooking

Unit –IV: Food Preparation and storage

Basic terms used in food preparation, Pre-preparation for cooking, Storage of raw and cooked food.

Reference Books:

1. B. Shreelaksmi.*Food Science*(second edition), New Age International, New Delhi.
2. Swaminathan. *Text book of Food Science*Vol-1, BAPPCO, Banglore
3. Devendrakumar Bhatt & Priyanka Tomar.*An Introduction to FoodScience, Technology & Quality Management*. Kalyani Publishers
4. Sumati R. Mudambi. *Fundamentals of Food & Nutrition*, Wiley Eastern Ltd.,New Delhi

Fundamentals of Food Science

Laboratory work

Total Marks: 10

1. Introduction to laboratory rules.
2. Equipments used in cooking.
3. Terms used in cooking.
4. Weights and Measures of raw and cooked food.
5. Methods of cooking.
    1) Traditional methods – Preparation of any two recipes from thefollowing:
        a) Boiling b) Roasting c) Frying d) Steaming
    2) Modern methods - Preparation of any two recipes from the following:
        a) Baking b) Solar c) Microwave d) Combination

Scheme of Internal Practical Evaluation	**10 marks**
1) Submission of Record book	5 marks
2) Viva – Voce	5 marks

SHIVAJI UNIVERSITY, KOLHAPUR

B. Voc. Part – I, Semester -I

Food Processing Technology

Paper - III: Principles of Food Preservation

Distribution of Workload: **Total Marks**: 50 Marks

Theory : 04 lectures per week

Total Workload**:** 04 lectures per week

Objectives:

• To enable the students to acquire knowledge on different preservation techniques used to enhance the shelf span of food product.

• To study the different mode of spoilage in foods and minimize the contamination by different preservation technology.

Unit– I: Basic Principles of Food Preservation

Definition, principles and importance of food preservation, general classification on the methods of food preservation, class I and class II preservatives, combination of preservatives,preservation by irradiation and fermentation.

Unit - II: Thermal processing methods of preservation

Principle and equipments: Canning, blanching, pasteurization, sterilization, evaporation, etc. Need and principle of concentration, methods of concentration – Thermal concentration, freeze concentration, membrane concentration, changes in food quality by concentration.
Food preservation by use of low temperature – Principle, equipments and effect on quality (Chilling, cold storage, freezing etc.)

Unit -III: Preservation by Removal of Moisture

Drying and dehydration-merits and demerits, factors affecting drying, preparation of food for drying, Freeze drying, dehydrofreezing-advantages, mechanism of freeze drying and dehydrofreezing, Concentration, principles and types of concentrated foods.

Unit -IV: Preservation by radiation, chemicals and preservatives

Definition, methods ofirradiation, direct and indirect effect, measurement of radiation dose, dosedistribution, effect on microorganisms. Deterioration of irradiated foods- physical, chemical and biological, effects on quality of foods. Preservation of foods bychemicals: antioxidants, mold inhibitors, antibodies, acidulants etc.Preservation by fermentation-Definition, advantages, disadvantages, types, equipments

Reference Books:

1. MC.Williams, M and Paine, H.(1984). *Modern Food preservation*Surjeet Publications, Delhi.

2. Potter, N.N. and Hotchkiss J. H.(1996). *Food Science*.CBS publishers and distributors
3. Srilakshmi, B..(2003). *Food Science* New Age International Publishers, New Delhi
4. Srivastava, R.PO and Kumar, S..(1994). *Fruit and vegetable preservation*International Bookdistribution Company, Lucknow
5. Subalakshmi, G and Udipi, S.A.. (2001). *Food processing and preservation*New Age International Publishers, New Delhi.
6. Tomar, Gajendra Singh. (2010). *Agronomy Basics and Applied*. Satish Serial Publishing House, Azadpur, New Delhi.

SHIVAJI UNIVERSITY, KOLHAPUR

B. Voc. Part – I, Semester -I

Food Processing Technology

Paper-IV: Fundamentals of Food and Nutrition

Distribution of Workload: **Total Marks**: 50 Marks

Theory : 04 lectures per week

Total Workload**:** 04 lectures per week

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Objectives:

• To understand the importance of nutrient in our daily diet.

• To formulate nutritionally enriched food products as perthe requirement.

Unit- I: Basic concept of Food and Food constituents

Basic concept of Food: Nutrient, Nutrition, Classification of Food, Classification of Nutrients.

Food constituents - Definition, occurrence, properties and metabolism of Protein, Carbohydrate and Lipids.

Unit-II: Enzymes and Biochemical changes in food

Enzymes - Definition, classification, enzyme kinetics.

Browning reactions in foods:

i. Non enzymic browning: Maillard reaction, browning of ascorbic acid, caramelization of sugars.

ii. Enzymic browning: Definition, mechanism, control measures.

Biochemical changes in foods of plant and animal origin: fruits, vegetables, cereals, pulses, oilseeds, meat, poultry, seafood, dairy and their products

Unit-III: Concept of food and nutrition

Concept of food and nutrition - Elements of nutrition, Food groups and role ofnutrients.

Energy metabolism – BMR

Recommended dietary allowances, Balanced diet for different age groups (Infancy to old age).

Unit– IV: Malnutrition

Malnutrition-Causes, types, symptoms and prevention, Assessment of nutritional status of the community, National nutrition policy

Reference Books:

13. Gillespie S, McLachlan M, Shrimpton R, editors. (2003). *Combating malnutrition: time to act*. Washington DC: World Bank.
14. Mudambi S.R., Rajagopal M.V. (2006). *Fundamentals of Foods, Nutrition and Diet Therapy*. New Age International Publishers, New Delhi

15. Shubangini A Joshi, (1998): *Nutrition and Dietetics*, Tata Mc Graw Hill Pub. Co. Ltd., New Delhi
16. Srilakshmi. B, (2005): *Dietetics*, V Edition, New Age International (P) Ltd, Publishers, Chennai.

SHIVAJI UNIVERSITY, KOLHAPUR

B. Voc. Part – I, Semester -I

Food Processing Technology

Paper-V: Agro Processing - I

Distribution of Workload: **Total Marks**: 50 Marks

Theory : 04 lectures per week

Total Workload**:** 04 lectures per week

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Objective:

To enable students –

1) to operate processing equipments.

2) to produce different agro products.

Unit- I: Agro processing industry

- Introduction to Agro processing industry.
- Scope and importance of Agro processed products.

Unit - II: Machinery in Agro processing

Processing equipments – Floor mill, mini grain millpulverizers, Hammer mill, Floor separator, Dal mill, Packingand Sealing machine, Balance.

Unit - III: Cereal grain – wheat and corn

- Different grains suitable for agro processing.
- Primary processing of wheat - cleaning, grading, milling
- Standards for wheat products.
- Production of wheat products.
- Dry milling, wet milling, Pop corn and corn flakes.

Unit - IV: Rice milling

- Properties of padding for rice milling
- Process of rice milling
- Hullers for rice milling.

Reference Books:

6. Yoginder K Alagh : Scope for Agro processing in India, Ajanta Publication.
7. Agro Based and Processed Food Products, New Delhi.
8. Niir Board : Modern Technology of Agro processing and Agricultural waste, NationalInstitute of India Re 2000

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester -I
Food Processing Technology
Paper-VI Principles of Food Preservation
Laboratory work

Total Workload: 04 **Total Marks:** 50 Marks

Practical - 04 lectures/week/ Batch

Objectives:

•To study the different mode of spoilage in foods and minimize the contamination by different preservation technology

Practicals:

1. Demonstration on canning and bottling of fruits and vegetables.
2. Preservation of food by high concentration of sugar i.e. preparation of jam.
3. Preservation of food by using salt e.g. Pickle.
4. Preservation of food by using acidulants i.e. pickling by acid, vinegar or acetic acid.
5. Preservation of food by using chemicals.
6. Demonstration on drying of green leafy vegetables.
7. Demonstration of preserving foods under cold v/s freezing process.
8. Visit to any food processing industry/unit.

Scheme of practical evaluation

Internal practical examination	**50 marks**
i)Preparation of any product	15 marks
ii) Submission of practical record book	15 marks
iii) Submission of visit report	10 marks
iv) Viva – Voce	10 marks

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SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester -I
Food Processing Technology
Paper-VII Fundamentals of Food and Nutrition
Laboratory work

Total Workload: 04 **Total Marks:** 50 Marks

Practical - 04 lectures/week/ Batch

Objectives:

•Student will enable to formulate nutritionally enriched food products as perthe requirementmethods.

Practicals:

1.Estimation of fructose by Rescorcinol method

2.Estimations of amino acids in foods.

3. Estimation of vitamin from food sample.

4. Determination of auto oxidative rancidity of fat and oils.

5. Calculation of BMR and body surface area.

6Calculation of energy value of food.

7. Planning and calculation of nutritive value of balanced diet for different age groups.

8. Computation of energy requirement on the basis of physical activity.

Scheme of practical evaluation

Internal practical examination	**50 marks**
i)Preparation of any product	15 marks
ii) Submission of practical record book	15 marks
iii) Submission of visit report	10 marks
iv) Viva – Voce	10 marks

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester -I
Food Processing Technology
Paper-VIII Agro Processing
Laboratory work

Total Workload: 04 **Total Marks:** 50 Marks

Practical - 04 lectures/week/ Batch

Objectives:

•To buildthe knowledge about the importance and production technology of cut flowers.

Practical

1. Physical analysis of grains.
2. Cleaning, grading and other pre-processing activities of grains.
3. Production of whole wheat flour.
4. Estimation of gluten content.
5. Flour Analysis.
6. Starch Estimation.
7. Angle of Repose.
8. Visit to Rice Mill.

Scheme of practical evaluation

Internal practical examination	**50 marks**
i)Preparation of any product	15 marks
ii) Submission of practical record book	15 marks
iii) Submission of visit report	10 marks
iv) Viva – Voce	10 marks

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SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester -I
Food Processing Technology
Paper-IX: Project/ Industrial Visit

Total Marks: 50 Marks.

Project planning and scheduling, project report submission and the viva-voce examinations.The industrial/field training shall be evaluated through the quality of workcarried out, the report submission and presentation(s). This work should be completed within a span of year.

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SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester – II
Food Processing Technology
Paper – X: Business Communication-II

Distribution of Workload: **Total Marks**: 50 Marks

Theory	: 04 lectures per week	Theory 40M
Practical	: 02 lectures per week per batch	Practical 10M

Total Workload: 06 lectures per week of 60min.

UNIT –I: Group Discussion
Preparing for a Group DiscussionInitiating a DiscussionEliciting Opinions, views etc. Expressing Agreement /DisagreementMaking Suggestions; Accepting and Declining SuggestionsSummingup**.**

UNIT –II: Business Correspondence
WritingMemos, e-mails, complaints,inquiries,etc.
Inviting Quotations Placing Orders, Tenders, etc

UNIT –III: English for Negotiation
Business Negotiations Agenda for Negotiation Stages of Negotiation

UNIT –IV: English for Marketing
Describing/ExplainingaProduct/Service Promotion of aProduct
Dealing/ bargaining with Customers
MarketingaProduct/Service:UsingPamphlets,Hoardings,
Advertisement, Public Function/Festival

Practical: Based on the theory units: Marks: 10

Reference Books:

· Herekar, Praksh (2007). *Business Communication.*Mehta Publications, Pune.
· Herekar,Praksh (2003).*PrincipalsofBusinessCommunication.*Mehta Publications, Pune
· John, David. *Group Discussions*.Arihant Publications, New Delhi.
· Kumar,Varinder(2000).*BusinessCommunication*.KalyaniPublishers,NewDelhi.
· Pardeshi,P.C.(2008). *ManagerialCommunication.*NiraliPrakashan,Pune.
· Pradhan, N. S.(2005).*Business Communication.* Himalaya Publishing House, Mumbai.
· Rai, Urmila& S. M. Rai.(2007). *BusinessCommunication.*Himalaya Publishing House, Mumbai
· Sethi,A.&B. Adhikari.*BusinessCommunication*.TataMcGrawHill.NewDelhi.
· Sonie,SubhashC.(2008) *MasteringtheArtofEffectiveBusinessCommunication*, Student Aid Publication,NewDelhi.
· Tickoo, Champa& Jaya Sasikumar (1979).*Writing with a Purpose*. OUP,New York.
· Whitehead,Jeoffrey&DavidH.Whitehead.(1996) *BusinessCorrespondence*.Wheeler Publishing, Allahabad.

Pattern of a Question paper
Business Communication –II
Semester –II paper-X

Time : 2 hours	**Total Marks:40**
Q.1 Do as directed questions items on unit 1 to be asked	10 (10out of 12)
Q.2 Write a letter of application	10
OR	
Draft a CV / Resume for a particular post	10
Q.3 Present a given information or a data using a table/ chart/piedigaram,etc. (any one diagram to be drawn)	10
Q.4 Fill in the blanks in the given interview	10

Practical Evaluation:

Oral and presentation based on units prescribed	**10 Marks**

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester – II
Food Processing Technology
Paper – XI: Fundamentals of Food Science - II

Distribution of Workload: **Total Marks**: 50 Marks

Theory	: 04 lectures per week	Theory 40M
Practical	: 02 lectures per week per batch	Practical 10M

Total Workload: 06 lectures per week of 60min.

Objectives:
·To understand the basic concept of various cookery.
·To become familiar with preparation of various cookery.

UNIT –I: Cereal cookery
- Structure, composition and Importance of cereal grains
- Types of cereals used in cooking
- Cereal cookery- Gelatinization, Dextrinization and Identityof grain
- Processed cereals, millets and Ready-To- Eat cerealsused in cooking

UNIT –II: Pulse and Legume Cookery
- Definition, composition and structure of pulses
- Cooking of Legumes
- Factors Affecting cooking time of pulses and legumes
- Uses of legumes in cookery

UNIT –III: Nuts and Oil seeds Cookery
- Types and composition of Nuts and Oil seeds
- Toxic substances in Nuts and Oil seeds
- Changes during cooking and storage

- Function of Nuts and Oil seeds in cookery

UNIT –IV:Fruits and Vegetables Cookery
- Classification of Fruits and vegetables
- Colour pigments in Fruits and vegetables.
- Effect of heat, acids and alkali on Fruits and vegetables.
- Changes during cooking and storage.

Reference Books:
1. B. Shreelaksmi.*Food Science*(second edition), New Age International, New Delhi.
2. Swaminathan. *Text book of Food Science*Vol-1, BAPPCO, Banglore
3. Devendrakumar Bhatt & Priyanka Tomar.*An Introduction to FoodScience, Technology & Quality Management*. Kalyani Publishers
4. Sumati R. Mudambi. *Fundamentals of Food & Nutrition*, Wiley Eastern Ltd.,New Delhi.

Fundamentals of Food Science - II (Practical) Marks: 10

1Preparation of product by Gelatinization.
2.Preparation of product by Dextrinization.
3.Preparation of product by Germinated pulses.
4.Preparation of product by milled pulses.
5.Preparation of product by nuts and oilseeds.
6. Preparation of product by green leafy vegetable.
7. Preparation of product by roots and tuber.
8. Preparation of product by fruits.

Scheme of Internal Practical Evaluation	**10 marks**
1) Submission of Record book	5 marks
2) Viva – Voce	5 marks

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester – II
Food Processing Technology
Paper-XII Food biochemistry

Total Workload: 04 **Total Marks:** 50 Marks
Theory - 04 lectures/week/ Batch

Objectives:
·To learn and understand the chemistry with respect to role and functionality ofconstituents of the food.

UNIT –I:Introduction to Food Biochemistry
Nature scope and development of food Biochemistry, role of food chemist. Moisturein foods.

i. Role and type of water in foods.
ii. Functional properties of water, role of water in food spoilage and food safety.
iii. Water activity and sorption isotherm.

UNIT –II:Carbohydrates and Vitamin
Classification, structure and function of carbohydrates.Functional characteristics of different carbohydrates, browning Reactions, modification of carbohydrates, Dietary fibers NDF, ADF, Cellulose, hemicellulose, pectin and carbohydratesdigestibility.
vitamin i. Definition of vitamin, type of vitamin,

ii. Water soluble (Vit B-1, B-2, B-3, C) and Fat soluble (Vit A, D, E, K)- their structure and functions

UNIT –III: Protein in Food
Role of proteins in foods.Classification and structural organization of proteins.Physicochemical properties, protein content and composition in various foods, functional properties of proteins in foods. Effects of processing on functional properties of proteins, unconventional sources of proteins.

UNIT –IV: Lipids in food
Role and use of lipids /fat, occurrence, fat group classification. Physicochemical aspects of fatty acids in natural foods, hydrolysis, reversion, polymorphism and its application. Chemical aspects of lipolysis, auto oxidation, antioxidants. Technology of fat and oil processing
a. Refining
b. Hydrogenations
c. Inter esterification

Reference Books:

- Garrett, R.H., Grisham, C.M. (1999).*Biochemistry*. 2nd edition, Saunders college publishing, India.
- David, L, Nelson and Cox,M.M. (2005). *Lehninger: Principles of Biochemistry*,4th edition, Maxmillan/Worth publishers/W.H. Freeman and Company.
- David Rawn, (2004). *Biochemistry*, Panima, Publishing Corporation, New Delhi.
- Donald Voet, Judith G,and other (2006). *Fundamentals of Biochemistry*,2nd edition,John Wiley and Sons, INC.

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester – II
Food Processing Technology
Paper XIII Food Microbiology

Total Workload: 04 **Total Marks:** 50 Marks
Theory - 04 lectures/week/ Batch

Objectives:
•Students will develop knowledge and understanding of different foodmicroorganisms and different techniques used in its detection.

UNIT –I: Introduction to Food Microbiology
Introduction- definition, history of microbiology of food. Types ofmicroorganisms normally associated with food- bacteria, yeast and moulds.Spoilage of food; factorsaffecting spoilage of foods and associated microflora.Biochemical changes caused by microorganisms- putrefaction, lipolysis, etc.

UNIT –II:Factors affecting growth and survival of microorganisms
Extrinsic factors- relative humidity, gaseous atmosphere.Intrinsic factors- nutrient content, water activity, oxidation reduction potential.Sources of contamination. Contamination of food-stuff, vegetables, fruits,cereals, pulses, oilseeds, milk and meat during handling and processing.

UNIT –III:Deterioration and spoilage of various types of food products
Fruits, vegetables, cereal and cereal products, meat and meat products, fishand other sea foods. Prevention of spoilage of these foods.

UNIT –IV:Food borne infections and food poisoning
Bacterial with examples of infective and toxic types- *Clostridium, Salmonella,Shigella, Staphyllococci, Compilobacter, Escerichia, Bacillu etc.*Mycotoxins in food with reference to Aspergillus species. Protozae.Prevention of food borne diseases.

Reference Books:

- Adams, M.R. and Moses M.G. (1995): *Food Microbiology*. 1st edition, New Age International (P) Ltd.
- Bibek Ray (2005). *Fundamental Food Microbiology*.2nd edition,CRC Press, Boca Raton London New York Washington.
- Frazier W C., (2002): *Food Microbiology*, Mc Graw Hill Book Co., 6th edition, New Delhi.
- Jay, James, M (2000): *Modern Food Microbiology*, 2nd edition, CBS Publisher.
- Pelezar, M.I and Reid, R.D, (1993): *Microbiology*, 5th edition, McGRaw Hill Book Company,New York.

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester – II
Food Processing Technology
Paper XIV: Agro Processing-II

Total Workload: 04 **Total Marks:** 50 Marks
Theory - 04 lectures/week/ Batch

Objectives:
·To understand the processing techniques of agro products.
·To know the use of agro processing equipments.

UNIT –I:Pulses and Legumes processing
- Principles of pulse milling
- Different methods of Dhal milling
- Milling of specific legumes- Red gram, Chickpea

UNIT –II: Oil seeds Processing
- Properties and suitability of oil seeds for processing
-Methods of oilseed processing
-Terminologies in oil processing industry

UNIT –III: Processing of plantation crops
- Concept of plantation crops
- Principles of processing of plantation crops
- Processing of tea, coffee, cocoa and coconut

UNIT –IV: Spice processing
- Spices suitable for processing
- Principles and methods of spice processing
- Machinery used for spice processing
- Quality aspects of spices

Reference Books:

- Kader A A: *Post Harvest Technology of Horticultural Crops*. 2nd edition, University of California
- Niir Board (2000) : *Modern Technology of Agro processing and Agricultural waste*, National Institute of India
- Salunkhe D K, Chavan J K, Adsule R N and Kadam S S : *World Oilseeds Chemistry, Technology and Utilization*. VNR, New York

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester -II
Food Processing Technology
Paper-XV: Food Biochemistry
Laboratory work

Total Workload: 04 **Total Marks:** 50 Marks

Practical - 04 lectures/week/ Batch

Objectives:
• To learn the chemistry with respect to role and functionality ofconstituents of the food.

Practicals:

9. Determination of moisture in food sample.
10. Determination of protein in food sample.
11. Determination of ash/minerals in food sample.
12. Determination of crude fat in food sample.
13. Determination of acidity & pH in food sample/beverages.
14. Determination of total, non-reducing and reducing sugars.
15. Determination of vitamin C content in food sample.
16. Determination of pigments in food sample
17. Estimation of calcium, iron and zinc in food products.

Scheme of practical evaluation

Internal practical examination	**50 marks**
i)Preparation of any product	15 marks
ii) Submission of practical record book	15 marks
iii) Submission of visit report	10 marks
iv) Viva – Voce	10 marks

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SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester -II
Food Processing Technology
Paper-XVI: - Food Microbiology
Laboratory work

Total Workload: 04 **Total Marks:** 50 Marks

Practical - 04 lectures/week/ Batch

Objectives:

- To understanding of different food microorganisms and different techniques used in its detection.

Practicals:

9. Study of compound microscope.
10. Cleaning and sterilization of glassware.
11. Preparation of nutrient broth, potato dextrose and nutrient agar media.
12. Pure culture techniques(Streak plate and pour plate).
13. Gram staining and study of morphology of bacterial cell.
14. Microbial examination of table containers and packaging materials.
15. Assessment of quality of raw milk by MBRT.
16. Bacteriological analysis (*Coliform* count) of water by MPN method.
17. Estimation of *Salmonella* from food sample.
18. Estimation of *Staphylococcus* from food sample.

Scheme of practical evaluation

Internal practical examination	**50 marks**
i)Preparation of any product	15 marks
ii) Submission of practical record book	15 marks
iii) Submission of visit report	10 marks
iv) Viva – Voce	10 marks

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SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester -II
Food Processing Technology
Paper-XVII: Agro Processing - II
Laboratory work

Total Workload: 04 **Total Marks:** 50 Marks

Practical - 04 lectures/week/ Batch

Objectives:

- To understand the processing techniques of agro products.

Practicals:

1.Preparation of soy milk.

2.Preparation of soy curd.

3.Preparation of Tofu.

4.Preparation of Pulse flour of different granule size.

5. Preparation of Peanut butter.

6. Preparation of Garlic paste.

7. Preparation of Coconut Chips.

8. Visit to Spice Industry/Pulse Mill.

Scheme of practical evaluation

Internal practical examination	**50 marks**
i)Preparation of any product	15 marks
ii) Submission of practical record book	15 marks
iii) Submission of visit report	10 marks
iv) Viva – Voce	10 marks

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SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester -II
Food Processing Technology
Paper-XVIII: Project/ Industrial Visit

Total Marks: 50 Marks.

Project planning and scheduling, project report submission and the viva-voce examinations.The industrial/field training shall be evaluated through the quality of work carried out, the report submission and presentation(s). This work should be completed within a span of year.

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SHIVAJI UNIVERSITY KOLHAPUR

STRUCTURE AND SYLLABUS OF B.VOC.

Bachelor of Vocation (B.Voc.) – Nursing

TTITLE	**:**	B.Voc. (Nursing) Syllabus (Semester Pattern) Under Faculty of Science
YEAR OF IMPLEMENTATION: June,		**Syllabus will be implemented from 2020**
DURATION	**:**	B. Voc. Part I, II and III (ThreeYears) B. Voc. Part I - Diploma (One Year) B. Voc. Part II - Advanced Diploma (Second Year) B. Voc. Part III – Degree (ThirdYear)
PATTERN OF EXAMINATIOM :		Semester Pattern
• **Theory Examination** - University		At the end of semester as per Shivaji Rules
• **Practical Examination** - there		i) In the1st, 3rd and 5th semester of B.Voc. will be internal assessment of practical record, related report submission and project reports at the end of semester ii) In the second semester of B. Voc. I, there will be internal practical examination at the end of semester iii) In the 4th and 6th semester of B. Voc. there will be external practical examination at the end of semester
MEDIUM OF INSTRUCTION:		English.
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

SCHEME OF EXAMINATION:

A) THEORY-

- The theory examination shall be at the end of the each semester.
- All the general theory papers shall carry 40 marks and all 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 marks.

  ii) Students will have to solve any five questions

  Que. No. 1: Short answer type question with internal choice (Two out of Three)

  Que. No. 2 to Que. No. 6: Long answer type questions.

  Que. No. 7: Short Notes with internal choice (Two out of Three)

B) PRACTICALS:

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

Standard of Passing:
As per the guidelines and rules for B. Voc. (Attached Separately – Annexure I)

Eligibility Criteria:

1. The Eligibility for admission is 10+2 or equivalent, in Science stream from any recognized board or University.
2. The Candidates who have passed DMLT, D.Farm, GNM

B.Voc. in Nursing

Course Structure

B.Voc.I (Diploma) Semester-I

Sr.No	Paper No	Title of the Paper	Theory/ Practical	Distribution of Marks		Total	Credits	
				Theory	Parctical		Theory	Practical
1.	I	Business Communication-I	Theory and Practical	40	10	50	03	02
2.	II	Psychology -I	Theory and Practical	40	10	50	03	02
3.	III	Anatomy and Physiology -I	Theory	50	-	50	03	-
4.	IV	Biochemistry , Nutrituion and Dietetics -I	Theory	50	-	50	03	-
5.	V	Microbiology and Pathology -I	Theory	50	-	50	03	-
6.	VI	Lab. Work- Anatomy and Physiology -I	Practical	-	50	50	-	03
7.	VII	Lab. Work- Biochemistry, Nutrituion and Dietetics –I	Practical	-	50	50	-	03
8.	VIII	Labwork - Microbiology and Pathology –I	Practical	-	50	50	-	03
9.	IX	Internship and Project Work- First Aid	---	-	50	50	-	02
Total				230	220	450	15	15

Rayat Shikshan Sanstha’s

Savitribai Phule Mahila Mahavidyalaya,Satara.

B.Voc. in Nursing

Course Structure

B.Voc.I (Diploma) Semester-II

Sr.No	Paper No	Title of the Paper	Theory/ Practical	Distribution of Marks		Total	Credits	
				Theory	Parctical		Theory	Practic
1.	X	Business Communication- II	Theory and Practical	40	10	50	03	02
2.	XI	Psychology -II	Theory and Practical	40	10	50	03	02
3.	XII	Anatomy and Physiology -II	Theory	50	-	50	03	-
4.	XIII	Biochemistry , Nutrituion and Dietetics -II	Theory	50	-	50	03	-
5.	XIV	Microbiology and Pathology -II	Theory	50	-	50	03	-
6.	XV	Lab. Work- Anatomy and Physiology -II	Practical	-	50	50	-	03
7.	XVI	Lab. Work- Biochemistry, Nutrituion and Dietetics –II	Practical	-	50	50	-	03
8.	XVII	Labwork - Microbiology and Pathology –II	Practical	-	50	50	-	03
9.	XVIII	Internship and Project Work- First Aid	---	-	50	50	-	02
Total				230	220	450	15	15

Scheme of Teaching: B.Voc.- Part I (Diploma) Semester-I

Sr. No.	Paper No.	Title	Distribution of workload (per week)		
			Theory	Practical	Total
1.	X	Business Communication- II	4	2	6
2.	XI	Psychology -II	4	2	6
3.	XII	Anatomy and Physiology -II	4	-	4
4.	XIII	Biochemistry , Nutrituion and Dietetics -II	4	-	4

5.	XIV	Microbiology and Pathology -II	4	-	4
6.	XV	Lab. Work- Anatomy and Physiology -II	-	4	4
7.	XVI	Lab. Work- Biochemistry, Nutrituion and Dietetics –II	-	4	4
8.	XVII	Labwork - Microbiology and Pathology –II	-	4	4
9.	XVIII	Internship and Project Work- First Aid	-	-	-
		Total	20	16	36

Scheme of Teaching: B.Voc.- Part I (Diploma) Semester-II

Sr. No.	Paper No.	Title	Distribution of workload (per week)		
			Theory	Practical	Total
1.	X	Business Communication- II	4	2	6
2.	XI	Psychology -II	4	2	6
3.	XII	Anatomy and Physiology -II	4	-	4
4.	XIII	Biochemistry , Nutrituion and Dietetics -II	4	-	4
5.	XIV	Microbiology and Pathology -II	4	-	4
6.	XV	Lab. Work- Anatomy and Physiology -II	-	4	4
7.	XVI	Lab. Work- Biochemistry, Nutrituion and Dietetics –II	-	4	4
8.	XVII	Labwork - Microbiology and Pathology –II	-	4	4
9.	XVIII	Internship and Project Work- First Aid	-	-	-
		Total	20	16	36

Eligibility for Admission 10 + 2 from Science faculty or equivalent Diploma

GNM

Eligibility for Faculty **M.D./M.B.B.S**

M.Sc. (Nursing, Biochemistry, Microbiology, Nutrition,) with NET / SET/Ph.D., M. A (English) with NET/SET/Ph.D. for Business Communication M. A (Psychology) with NET/SET/Ph.D. for Psychology

Eligibility for Laboratory Assistant: B.Sc. (Nursing)

Staffing Pattern : **In 1st Year of B. Voc. - 1 Full Time and 1 Guest Lecturer**

6 CHB Lecturers for Business Communication, Psychology, Biochemistry, Nutrition, Microbiology, Pathology

Laboratory Assistant **:** For 1st Year of B. Voc. - 1 Part-time

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SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester - I
Nursing
Paper – I: Business Communication-I
Total Workload: 06 lectures per week of 60 min.

Distribution of Workload:

Theory: 04 lectures per week

Practical: 02 lectures per week per batch of 20students

Units Prescribed for Theory:

Marks:40

Unit- I: Use of English in Business Environment.

Business Vocabulary: Vocabulary for banking, marketing and for

maintaining public relations.
What is a sentence? Elements of a sentence. Types of sentence: Simple, compound, complex.

Unit- II: Writing a Letter of Application and CV/Resume

Structure of a letter of application for various posts CV/ Resume and its essentials

Unit- III: Presenting Information / Data.

Presenting information/data using graphics like tables, pie charts, tree diagrams, bar diagrams, graphs, flowcharts

Unit - IV: Interview Technique

Dos and don'ts of an interview preparing for an interview
Presenting documents Language used in an interview

Practical:Based on the theory units: Marks: 10

Reference Books:

• Sethi, Anjanee & Bhavana Adhikari. *Business Communication*. NewDelhi: Tata McGraw Hill Tickoo,

• Champa& Jaya Sasikumar. *Writing with a Purpose*. NewYork: OUP, 1979.

• Sonie, Subhash C. *Mastering the Art of Effective Business Communication.* New Delhi: Student Aid Publication,2008.

• Herekar, Praksh. *Business Communication*. Pune: Mehta Publications, 2007.

• Herekar, Praksh. *Principals of Business Communication.Pune*: Mehta Publi. 2003

Pattern of a Question Paper

B. Voc. Part-I Business Communication-I

Semester–I Paper: I

Time:2 hours Total Marks:40

Q.1	Do as directed. Question items on **Unit 1** to be asked.(10 out 12)	10
Q.2	Write a letter of application. OR Draft a CV/ Resume for a particular post.	10
Q.3	Present a given information or data using a table/chart/pie diagram, etc. 10 (Any one diagram to be drawn.)	
Q. 4	Fill in the blanks in the given interview.	10

Practical **Evaluation:** Marks : 10

Oral and Presentation based on the units prescribed.

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester - I
Nursing
Paper – II: Psychology-I
Total Workload: 06 lectures per week of 60 min.

Distribution of Workload:

Theory: 04 lectures per week

Practical: 02 lectures per week per batch of 20students

Total Marks: 50 marks (Theory 40+Practical 10)

Objectives :

Students will be able to :

1.Understand the importance of psychology in personal and professional life.

2.Understand the biology of human behavior.

3.Understand cognitive and affective processes of human mind.

4. Applying psychological principles while performing nursing duties.

Unit I : Introduction to Psychology

1.History and origin of science of psychology

2.Definitions & scope of psychology

3.Relevance to nursing

4.Methods of psychology

Unit II- Biology of Human behavior

1.Body mind relationship

2.Genetics and behavior

3.Brain and behavior

4.Association Cortex, Rt and Lt Hemispheres

5.Psychology of Sensations

6.Muscular and glandular controls of behavior

7.Nature of behavior of an organism/Integrated Responses

Unit III- Cognitive process

1.**Attention** – Definition, characteristics and types

2.**Perception**: Meaning, Principles, factors affecting objects, depth, distance and motion. Errors in perception.

3. **Learning**: Nature, types, learner and learning, factors influencing, laws and theories, process, transfer, study habits

4. **Memory**: Meaning, Types, Nature factors influencing, Development Theories and methods of memorizing and Forgetting

5. **Thinking**: Types and levels, stages of development, Relationship with language and communication

6**. Intelligence**: Meaning, classification, uses, theories

7.**Aptitude**: concept, types Individual differences and variability

8.**Psychometric Assessments** of cognitive processes

9.**Alterations in cognitive process** Applications

Unit IV-Motivation, Emotions, Stress, Attitudes and their Influence on behavior

1.**Motivation**: Meaning, Concepts, Types, Theories,Motives and behavior, Maslow's theory, Formation of self-concept, Conflicts and frustration, conflict resolution

2.Emotions & stress

Emotion: Definition, components, changes in emotions, theories, emotional adjustments, emotions in health and illness

Stress, stressors, cycle, effect, adaptation & coping

3. **Attitude**: Meaning, nature, development, factors affecting Behavior and attitudes, Attitudinal change

4. **Psychometric assessments** of emotions and attitudes

5.**Alterations in emotions**

6.**Applications**

Paractical: Based on the theory units **Marks-10**

Reference Books :

1. Bhcetic B. D. & Craig M: Element of psychology and mental hygiene for Nurses, Chennai. Orient Longmal.
2. Hurlock E: Development psychology: Tata McGraw Hill Book Co. Dodge Fernald and Peter S. Fernald, Introduction to Psychology, 5 editions, AITBS, 2004.
3. Jacob Anthikad, Psychology for Graduate Nurses, 3 editions, Jaypee, 2004.
4. Morgan C.T. & King, Introduction to Psychology, 7 editions, Megrow bill international.
5. Second course in psychology, Higher secondary std. XII K.T. Basantani, Sheth publishers Pvt. Ltd, 9th ed. 2005
6. Second course in Psychology, Higher secondary std. XI K.T. Basantani, Sheth publishers Pvt. Ltd,8th ed. 2005
7. Hurlock E: Development psychology: Tata MC grow Hill Book Co.
8.Longman Pvt. Ltd 2. Dandekar, W.N. : Fundamentals of experimental psychology ; Kolhapur : MoghePrakashan

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester - I
Nursing
Paper – III: Anatomy and Physiology- I
Total Workload: 04 lectures per week of 60 min.

Distribution of Workload:

Theory: 04 lectures per week

Total Marks: 50 marks

Objectives:

1) To understand different parts of human body, anatomical position and common anatomical terms.
2) To understand structure and working of different systems in Human Body
3) To apply the knowledge of Anatomy and Physiology in Nursing Practice.

Unit I-Introduction to Human Anatomy, Physiology and Nursing:

1.Common anatomical terms

2.Different parts of human body

3.Anatomical Position

Unit II- Skeletal System:

1.Bones and joints and their working

2.Types of bones and their Physiology

Unit III- Skin and Muscular System:

1.Function of Skin

2. Types of Muscles and its Function

Unit IV- Digestive and Respiratory System:

a) Digestive System:

1. Different Parts of Digestive Systems

2. Glands Related to Digestive System

b) **Respiratory System:**

Structure of Larynx , Trachea, Bronchi and Lungs.

Reference Books :

1. Waugh, Anne (2003), " Ross & Wilson's Anatomy & Physiology in health & illness''10thed., Churchill Livingstone.
2. Anthony & Thibodcon (2000), "Anatomy & Physiology for nurses'' 11th ed., C.V.,Mosby Co., London.
3. Greig, Rhind, " Riddle's Anatomy & Physiology'', 7th ed., Churchill Livingstone.
4. Singh, I. B. (2005), "Anatomy & Physiology for nurses", 1st ed., Jaypee.
5. Tortora, (2003), "Principles of Anatomy & Physiology," 10th ed., Wiley inter.
6. Chaurasia, B.D. (2004), "Human Anatomy", 4th ed., CBS publishers.
7. Sembulingam, "Essentials of Medical Physiology," 3rd Edition 2004 J.P. Publications. 10.T Clenister and Jean Rosy (1974). "Anatomy and Physiology for Nurses" 2nd Edition, William Hernmarni Medical BK. Ltd.
8. Ganong. F. William, "Review of Medical Physiology", 15th Edition, Prentice Hall,International Inc., Appleton and Lange.
9. Guyton and Hall, "Textbook of Medical Physiology," 9th Edition, A Prism2. Indian Edn. Pvt. Ltd.

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester - I
Nursing
Paper – IV: Biochemistry, Nutrition and Dietetics- I
Total Workload: 04 lectures per week of 60 min.

Distribution of Workload:

Theory: 04 lectures per week

Total Marks: 50 marks

Objectives:

1) To understand the basic concept of Biochemistry.

2) 2) To apply the knowledge of Nutrition and Protein in Nursing Practice

Unit-I Introduction to biochemistry

a)Introduction to biochemistry

b) Study of cell

c) Biochemical functions of various components of Cell.

d) Cell membrane and transport

Unit II- Nucleic Acids

A. Nucleotides –

a)chemistry and it's biological significance.

b)Nucleotide metabolism and medical importance.

c)Chemical nature of nucleic acids- DNA, RNA.

d)Structure and medical significance of DNA and RNA

B. Enzymes-

a)Nature and functions,

b)nomenclature and classification,

c)Mechanism of action of enzymes,

d)diagnostic importance of enzymes and SERM

Unit III -Food –I

a) Introduction &definition ,socio-cultural aspects of food

b) Macronutrients , Micronutrients & their functions

c)Macronutrients- carbohydrates, Fats ,Protein and their deficiency

d) Micronutrients – Vitamins, Minerals and their deficiency

e) Water

Unit IV- Food -II

a) Factors determining food acceptance.

b) Functions of food

c) Meal patterns - choice of right food

d) Major deficiency diseases related to carbohydrates, Fats, Protein, Vitamins , Minerals

References Books:

- B. Srilakshmi: Dietetics, New Age International Publishers.
- B. Srilakshmi: Nutrition Science , New Age International Publishers
- B. Srilakshmi: Food Science , New Age International Publishers
- Dr.Jyotisingh ,Handbook of Nutrition & Dietetics ,Lotus press publishers .New delhi -02
- Dominic W.S.Wong, Mechanism and Theory in food chemistry ,CBS Publishers Pvt Ltd.
- Gopalan, C. etal : Nutritive value of Indian Foods, Indian Council of Medical Research
- Guyton. A.C. Hall, J.E. : Text Book of Medical Physiology – 9 Ed/ Prism Books (Pvt.) Ltd. Bangalore

• Norman N.Potter ,Joseph H.Hotchkiss ,:Food Science, Fifth edition ,CBS Publishers Pvt Ltd

• Swaminathan, M. : Essentials of Foods and Nutrition, Vols -1and II. Ganesh and Co. Madras.

•Sunetra Roday : Food Hygiene and sanitation with case studies ,Second edition ,McGraw Hil Education (India) Pvt Ltd .

• Shubhangi A. Joshi ,Nutrition& Dietetics ,fourth edition ,McGraw Hill Education (India) Pvt Ltd

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester - I
Nursing
Paper – V: Microbiology and Pathology- I
Total Workload: 04 lectures per week of 60 min.

Distribution of Workload:

Theory: 04 lectures per week

Total Marks: 50 marks

Objectives:

1. Understand different Concepts, terminology and Principles of Microbiology
2. Understand Pathogenic organisms and special pathology
3. Apply the knowledge of pathology in Nursing Practice.

Unit-I Introduction to Microbiology and Pathology

• Importance of microbiology with respect to nursing • Historical prospective • Concept and terminology • Principles of microbiology

Unit II- Microorganisms -General Characteristics

• Structure and classification of microbes • Morphological types • Size and form of bacteria •Colony characteristics• Growth and nutrition of microbes –Temperature, Moisture, Blood and body fluids• Laboratory methods for identification of microorganisms• Staining techniques, gram staining, acid fast staining, hanging drop preparation • Culture various medias

Unit III Pathogenic organisms

• Importance of study of pathology • Definition of terms • Methods of technique • Cellular and tissue changes • Infiltration and regeneration • Inflation and infection • Wound healing • Vascular changes • Microorganisms – Cocci, Bacilli, Spirochete, Mycoplasma, Rickettsia,

Chlamydia • Viruses • Fungi-Superficial and deep mycosis • Parasites • Rodents and vectors

Unit IV-Special pathology

- Pathological changes in disease conditions o0f various systems

• Respiratory tract, Pericardial effusion, Gastro Intestinal Tract, Liver Gall bladder & pancreas, Kidneys and Urinary tract, Male and female genital systems, Central nervous system, Skeletal system

Reference Books:

1. Microbiology by Pelczar, M.J.Jr., Chan E.C.S., Krieq, N.R. 5th edition, 1986 (McGraw Hills Publication)
2. Fundamentals of Microbiology by Frobisher, Hindsdill, Crabtree, Good Heart, W.B. Saunders Company, 7th edition
3. Medical Microbiology Vol.I and II by Cruick Shank R., Duguid J. P., Marmion B.P., Swain R.H.A., XIIth edition, Churchill Livingston , New York
4. General Microbiology by Stanier R.Y.V thedtion, McMilan, London
5. Medical Microbiology by N.C. Dey and T. K. Dey
6. Practical Microbiology 1st edition (2002)R.C. Dubey, D.K. Maheshwari, published by S. Chand an company Ltd
7. Laboratory manual of food Microbiology by Neelimagarg, K. L. Garg, K. G. Mukerji published by LK International Publishing House (2017)
8. Medical laboratory technology Vol I and II, Kanai L Mukhergee, Swarajit Ghosh, Tata McGraw Hill Education Private Limited

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester - I
Nursing
Paper – VI: Lab Work and Practical- Anatomy and Physiology
Total Workload: 04 lectures per week of 60 min.
Distribution of Workload:

Practical: 04 lectures per week per batch

Total Marks: 50 marks (Practicals 50)

Objectives:

1. To understand in detail the working and functioning of skeletal and joint System.

2. To understand in detail the working and functioning of skin, muscular, digestive and respiratory

system of human body

Practicals:

I)Skeletal and Joint System

1.Audio –visual demonstration of Skeletal and Joint System

2. Demonstration of bones and joints with the help of skeleton and Surface Marking

II) Skin and Muscular System

3.Diagram Sketching, labeling of skin and muscular systems(Journal Sheet)

III) Digestive System

4.Diagram sketching and labeling of human digestive systems with the help of Charts

5. Diagram sketching and labeling of Glands related to Digestive System

IV) Respiratory System

6. Diagram sketching and labeling of Nose, Larynx, Trachea , Bronchi and Lungs

7. First Aid

8. Practical on use of Pulse Oxy-meter

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester - I
Nursing
Paper – VII: Lab Work and Practical- Biochemistry, Nutrition and Dietetics-I
Total Workload: 04 lectures per week of 60 min.
Distribution of Workload:

Practical: 04 lectures per week per batch

Total Marks: 50 marks (Practicals 50)

Objectives:

1) To analyse and study safety and precaution in Biochemeistry lab
2) To learn DNA, RNA, balanced diet, water purification methods, measurement of PH, vitamins, minerals, glucose

Practicals :

1. learning and understanding of Safety in biochemistry laboratory, guidance & Precaution while Practical
2. Diagram, sketching and labeling cell and its components.
3. Diagram, sketching and labeling of structure of DNA and RNA.
4. Preparation of balanced diet chart.
5. Preparation specific Diet charts in varies disorders of systems.
6. Water purification method (1) Domestics water (2) Public/Community water supply.
7. Measurement of PH and Study of the buffers.
8) Estimation of vitamins ,minerals and glucose.

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester - I
Nursing
Paper – VIII: Lab Work and Practical- Microbiology and Pathology- I
Total Workload: 04 lectures per week of 60 min.
Distribution of Workload:

Practical: 04 lectures per week per batch

Total Marks: 50 marks (Practicals 50)

Objectives:

1.Understand how to control Demonstration of laboratory equipments Microbiology and Pathology

2. Understand Pathogenic organisms and special pathology

3. Apply the knowledge of clinical pathology in Nursing Practice

Practicals :

1) Demonstration of laboratory equipments- Incubator, Autoclave, Hot air oven, Seitz filter , Distilled water plant, anaerobic jar

2) Microscopic examination of bacteria by,

a. Monochrome staining

b. Gram staining

c. Negative staining

d. Cell wall staining

3) Preparation of bacteriological culture media (Peptone water, Nutrient broth, Nutrient agar, Mac Coney's agar).

4) Preparation of culture media for fungi (Sabouraud's agar, PDA)

5) Observation of motility by hanging drop technique

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester - I
Nursing
Paper –IX: Internship/ Project Work-First Aid- I

Total Workload: 04 lectures per week of 60 min.
Distribution of Workload:

Practical: 04 lectures per week per batch

Total Marks: 50 marks (Practicals 50)

Internship in associated hospital for hands on training and Project work based on any one aspect / Problem related to syllabus.

Scheme of External Evaluation :-

a) Internship
   1) Internship Report 15 Marks
   2) Presentation and viva - Voce 10Marks

b) Project Work
   1) Project Report 15 Marks
   2) Presentation and viva - Voce 10 Marks

I) Format of Internship Report

1. Introduction to Course and relevance of associated institutes
2. Objective of Internship
3. Schedule and Attendance of Internship
4. Detail Report on Hands on training regarding acquired skills
5. Conclusion

II) Project Design and Methodology

1. Introduction
2. Selection of Problem
3. Objectives
4. Statement of Problem / Project
5. Data Collection, Interpretation
6. Finding and Suggestions
7. Appendices, Bibliography

- **Note :**

Guidelines for internship

1. Every candidate have to devote per day 2 hours in associated hospital

2. Candidate has to write daily report of work done, and should maintain the daily dairy

3. Candidate has to follow all the rules of associated institute / hospitals.

Guidelines for Project

1. Every candidate will be given the mentor for the project, she has to prepare the project work. Under his/ her supervision

2. All candidates must have to follow the **Project Design and Methodology** format.

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester - I
Nursing
Paper – X: Business Communication-II
Total Workload: 06 lectures per week of 60 min.

Distribution of Workload:

Theory: 04 lectures per week

Practical: 02 lectures per week per batch of 20students

Units Prescribed for Theory:

Marks:40

Unit- I: Group Discussion

Preparing for a Group Discussion Initiating a Discussion Eliciting Opinions, views etc. Expressing Agreement /Disagreement Making Suggestions; Accepting and Declining Suggestions Summingup.

Unit- II: Business Correspondence

Writing Memos, e-mails, complaints, inquiries,etc. Inviting Quotations Placing Orders, Tenders, etc

Unit- III: English for Negotiation.

Business Negotiations Agenda for Negotiation Stages of Negotiation

Unit - IV: English for Marketing

Describing/ExplainingaProduct/Service Promotion of aProduct Dealing/ bargaining with Customers Marketing a Product/Service: Using Pamphlets,Hoardings, Advertisement, Public Function/Festival

Practical: Based on the theory units Marks: 10

ReferenceBooks:

• Herekar, Praksh. *Business Communication*.Pune: Mehta Publications, 2007.

• Herekar,Praksh. Principals of Business Communication. Pune: Mehta Publications, 200

• John, David. *Group Discussions*.New Delhi: ArihantPublications.

• Kumar,Varinder.BusinessCommunication.NewDelhi:KalyaniPublishers,2000.

• Pardeshi, P.C.*ManagerialCommunication*.Pune:NiraliPrakashan,2008.

• Pradhan, N. S. *Business Communication*. Mumbai: Himalaya Publishing House, 2005.

• Rai, Urmila& S. M. Rai.*BusinessCommunication*.Mumbai: Himalaya Publishing House, 2007.

• Sethi,A. &B. Adhikari.*BusinessCommunication*.NewDelhi:TataMcGrawHill.

• Sonie,Subhash C.*Mastering the Art of Effective Business Communication.* NewDelhi: Student Aid Publication, 2008.

• Tickoo, Champa& Jaya Sasikumar.*Writing with a Purpose*. New York: OUP, 1979.

•Whitehead,Jeoffrey & David H.Whitehead. *Business Correspondence*. Allahabad:Wheeler publishing 1996

Pattern of Question Paper

B.Voc. Part-I

Business Communication-II

Semester –II Paper-II

Time:2hours **Total Marks:40**

Q. 1 Fill in the blanks in the following Group Discussion. 10
(On **Unit 5**) (10 out 12)

Q. 2 Attempt **ANY ONE** of the following (**A** or **B**): 10

(On **Unit 6**)

Q. 3 Fill in the blanks with appropriate responses: 10
(On **Unit 7**)

Q. 4 Attempt **ANY ONE** of the following (**A** or **B**): 10

(On **Unit 8**) (10 out 12)

PracticalEvaluation: Marks: 10

Oral and Presentation based on the units prescribed.

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester - I
Nursing
Paper – XI : Psychology-II
Total Workload: 06 lectures per week of 60 min.

Distribution of Workload:

Theory: 04 lectures per week

Practical: 02 lectures per week per batch of 20students

Total Marks: 50 marks (Theory 40+Practical 10)

Objectives :

1. Understand the influence of personality of human behavior.
2. Appreciates developmental psychology.
3. understands the significance of mental hygiene and mental health.
4. Assist with psychological assessments and tests.
5. Participating in psychological assessment of patients

Unit I- Personality

1.Definitions, topography, types, theories

2.Psychometric assessments of personality

3.Alterations in personality

4.Applications

Unit II- Developmental Psychology

1.Psychology of people at different ages from infancy to old age

2.Psychology of vulnerable individuals-challenged, women, sick, etc.

3. Psychology of groups

Unit III- Mental Hygiene and Mental Health

1.Concept of mental hygiene and mental health

2.Characteristics of mentally healthy person

3.Warning signs of poor mental health

4.Promotive and preventive mental health - Strategies and services.

5.Ego defense mechanisms and implication

6. Personal and social adjustment

7.Guidance and counseling

8.Role of nurse

Unit IV- Psychological assessment & tests

1.Types, development, characteristics - Principles, Uses, Interpretations and

2. Role of nurse in psychological assessment

Practical based on above theory units **Marks 10**

Reference Books

1. Bhcetic B. D. & Craig M: Element of psychology and mental hygiene for Nurses, Chennai. Orient Longmal.

2. Hurlock E: Development psychology: Tata MC grow Hill Book Co. Dodge Fernald and Peter S. Fernald, Introduction to Psychology, 5 editions, AITBS, 2004.

3. Jacob Anthikad, Psychology for Graduate Nurses, 3 editions, Jaypee, 2004.

4. Morgan C.T. & King, Introduction to Psychology, 7 editions, McGraw hill international.

5. Second course in psychology, Higher secondary std. XII K.T. Basantani, Sheth publishers Pvt. Ltd, 9th ed. 2005

6. Second course in Psychology, Higher secondary std. XI K.T. Basantani, Sheth publishers Pvt. Ltd,8th ed. 2005

7. Hurlock E: Development psychology: Tata MC grow Hill Book Co.

8.Longman Pvt. Ltd 2. Dandekar, W.N. : Fundamentals of experimental psychology ; Kolhapur : MoghePrakashan

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester - I
Nursing
Paper – XII: Anatomy and Physiology- II
Total Workload: 04 lectures per week of 60 min.

Distribution of Workload:

Theory: 04 lectures per week

Total Marks: 50 marks

Objectives:

1. To acquire knowledge of the Cardio-vascular system

2. To students able to understand the Blood and Circulation system.

3. To understand the alteration in physiology disease and practice of nursing.

Unit I- Cardio-vascular system

1.Heart and pericardium

2. Arterial system

3.Venous System

Unit II- Blood and Circulation

1. Blood components and Functions

2. Blood Groups

3. Haemopoesis of Blood, Destruction of Blood cells, Jaundice

4. Cardiac Cycle

5. Pulmonary Circulation

6. Portal Circulation

7. Coronary Circulation

Unit III- Excretory and Reproductive System

a) Excretory System

1. Kidneys

2.Ureter

3. Urinary Bladder and Urethra

b) Reproductive System

1. Male Reproductive System

2. Female Reproductive System

3.Sterlization

Unit IV- Endocrine System and Nervous system sand Special Senses

a) Endocrine System:

1. Definition, Function and Site of Glands

b) Nervous system and Special Senses

1. Meninges and CSF

2. Brain and Spinal Cord

3. Motor Nervous System

Reference Books :

1. Waugh, Anne (2003), " Ross & Wilson's Anatomy & Physiology in health & illness''10thed., Churchill Livingstone.
2. Anthony & Thibodcon (2000), "Anatomy & Physiology for nurses'' 11th ed., C.V.,Mosby Co., London.
3. Greig, Rhind, " Riddle's Anatomy & Physiology'', 7th ed., Churchill Livingstone.

4. Singh, I. B. (2005), “Anatomy & Physiology for nurses”, 1st ed., Jaypee.
5. Tortora, (2003), “Principles of Anatomy & Physiology,” 10th ed., Wiley inter.
6. Chaurasia, B.D. (2004), “Human Anatomy”, 4th ed., CBS publishers.
7. Sembulingam, “Essentials of Medical Physiology,” 3rd Edition 2004 J.P. Publications. 10.T Clenister and Jean Rosy (1974). “Anatomy and Physiology for Nurses” 2nd Edition, William Hernmarni Medical BK. Ltd.
8. Ganong. F. William, “Review of Medical Physiology”, 15th Edition, Prentice Hall,International Inc., Appleton and Lange.
9. Guyton and Hall, “Textbook of Medical Physiology,” 9th Edition, A Prism2. Indian Edn. Pvt. Ltd.

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester - I
Nursing
Paper – XIII: Biochemistry, Nutrition and Dietetics- II
Total Workload: 04 lectures per week of 60 min.

Distribution of Workload:

Theory: 04 lectures per week

Total Marks: 50 marks

Objectives:

- To enable students to :
- To calculate the quantity of dietary ingredient as per calorie requirement.
- To understand the importance of nutrition in health.
- To understand health disorders due to improper diet

Unit I- Carbohydrates.

Introduction, classification, chemistry, properties of carbohydrates and their tests.

Biological functions of carbohydrates. Storage of carbohydrates in the body, liver and muscles, carbohydrate metabolism- glycolysis, TCA cycle, glycogenesis, glycogenolysis. genetic disorder of carbohydrate metabolism. Blood glucose and its regulation, GTT, hyperglycemia, hypoglycemia and Glucosuria

Unit II- Lipids.

Lipid - Introduction, classification, chemistry, properties, their test, Biological functions.

Lipid metabolism- biosynthesis of fats, fatty acid oxidation. storage of fats in the body, blood lipid, ketone bodies. Clinical disorders related with lipid metabolism

Unit III- Vitamins and Minerals.

Vitamins -. Introduction , classification, Structure, sources and biochemical functions of fat soluble and water soluble vitamins, clinical disorders related to vitamin deficiency.

Minerals-Introduction. Major minerals,trace minerals , there biochemical functions.disorders related mineral deficiency and toxicity.

Unit IV- Miscellaneous.

Iron metabolisms. Formation and breakdown of hemoglobin. Water, electrolytes and acid balance. pH of Blood and its regulation. Role of buffers, lungs, kidneys. Liver function tests, their biochemical principles.

Reference Books:

- B. Srilakshmi: Dietetics, New Age International Publishers.
- B. Srilakshmi: Nutrition Science , New Age International Publishers
- B. Srilakshmi: Food Science , New Age International Publishers
- Dr.Jyotisingh ,Handbook of Nutrition & Dietetics ,Lotus press publishers .New delhi -02
- Dominic W.S.Wong, Mechanism and Theory in food chemistry ,CBS Publishers Pvt Ltd.
- Gopalan, C. etal : Nutritive value of Indian Foods, Indian Council of Medical Research
- Guyton. A.C. Hall, J.E. : Text Book of Medical Physiology – 9 Ed/ Prism Books (Pvt.) Ltd. Bangalore
- Norman N.Potter ,Joseph H.Hotchkiss ,:Food Science, Fifth edition ,CBS Publishers Pvt Ltd
- Swaminathan, M. : Essentials of Foods and Nutrition, Vols -1and II. Ganesh and Co. Madras.
- Sunetra Roday : Food Hygiene and sanitation with case studies ,Second edition ,McGraw Hil Education (India) Pvt Ltd .
- Shubhangi A. Joshi ,Nutrition& Dietetics ,fourth edition ,McGraw Hill Education (India) Pvt Ltd

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester - I
Nursing
Paper – XIV: Microbiology and Pathology- II
Total Workload: 04 lectures per week of 60 min.

Distribution of Workload:

Theory: 04 lectures per week

Total Marks: 50 marks

Objectives:

1. Understand how to control infection and develop Immunity of Human beings.

2. Understand Pathogenic organisms and special pathology

3. Apply the knowledge of clinical pathology in Nursing Practice.

Unit I- Infection control

•Infection: Sources, portals of entry and exit, transmission • Asepsis • Disinfection: Types and methods • Sterilization: Types and methods • Chemotherapy and antibiotics • Standard safety measures • Biomedical waste management • Role of nurse • Hospital acquired infection • Hospital infection control programme - Protocols, collection of samples, preparation of report and status of rate of infection in the unit/ hospital nurses accountability continuing education etc.

Unit II-Immunity

• Immunity- types, classification • Antigen and antibody reaction • Hypersensitivity- skin test • Serological test (Vaccines & sera-types and classification, storage and handling, cold chain)

Unit III- Clinical pathology

• Various blood and bone marrow test in assessment and monitoring of disease conditions. • Hemoglobin • RBC, White cells, & platelet counts • Bleeding time, clotting time, and prothrombin time • Blood grouping and cross matching

Unit IV- Clinical pathology

Blood chemistry • Blood culture • Serological and immunological test • Other blood test • Examination of bone marrow • Methods of collection of blood specimen for various clinical Pathology, biochemistry, microbiology tests. • Inference and normal values

Reference Books:

1. Microbiology by Pelczar, M.J.Jr., Chan E.C.S., Krieq, N.R. 5th edition, 1986 (McGraw Hills Publication)
2. Fundamentals of Microbiology by Frobisher, Hindsdill, Crabtree, Good Heart, W.B. Saunders Company, 7th edition
3. Medical Microbiology Vol.I and II by Cruick Shank R., Duguid J. P., Marmion B.P., Swain R.H.A., XIIth edition, Churchill Livingston , New York
4. General Microbiology by Stanier R.Y.V thedtion, McMilan, London
5. Medical Microbiology by N.C. Dey and T. K. Dey
6. Practical Microbiology 1st edition (2002) R.C. Dubey, D.K. Maheshwari, published by S. Chand and company Ltd
7. Laboratory manual of food Microbiology by Neelima Garg, K. L. Garg, K. G. Mukerji published by LK International Publishing House (2017)
8. Medical laboratory technology Vol I and II, Kanai L Mukhergee, Swarajit Ghosh, Tata McGraw Hill Education Private Limited

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester - II
Nursing
Paper – XV: Lab Work and Practical- Anatomy and Physiology-II
Total Workload: 04 lectures per week of 60 min.
Distribution of Workload:

Practical: 04 lectures per week per batch

Total Marks: 50 marks (Practicals 50)

Objectives: 1. Understanding the Cardio-Vascular Mechanism through practical.

2. To Study importance of Blood Groups in Blood transfusion and Pregnancy's

3. To know the importance of Family Planning.

Practicals:

Cardio-vascular System

1.Recording pulse

2. Blood Pressure Recording

3. Heart beats auscultation

Blood and Circulation

4. Haemogram

5.RBC

6. WBC

7. ESR

8. Peripheral smear

9. Clotting time

10. Bleeding time

11. Determination of Blood Groups, Standard and Rh. Grouping

12. Grouping and Cross Matching

13. Excretory System

14. Urine-Routine and Microscopic

15.Kidney Function Test

16. Reproductive System- .Different Contraceptive Devices

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester - II
Nursing
Paper – XVI: Lab Work and Practical- Biochemistry, Nutrition and Dietetics-II
Total Workload: 04 lectures per week of 60 min.
Distribution of Workload:

Practical: 04 lectures per week per batch

Total Marks: 50 marks (Practicals 50)

Objectives:

1. Students abale to Determine glucose in Serum.
2. Students will sucessfully conducting Creatinine clearance test.
3. To apply the knowledge of Biochemistry and Nutrition in Nursing Practice

Practicals:

1) Determination of glucose in serum
2) Determination and estimation of glucose and proteins in urine.
3) Test for bilirubin and urobilinogen in urine.
4) Creatinine clearance test.
5) Estimation of uric acid in urine and serum.

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester - II

Nursing
Paper – XVII: Lab Work and Practical- Microbiology and Pathology- II
Total Workload: 04 lectures per week of 60 min.
Distribution of Workload:
Practical: 04 lectures per week per batch

Total Marks: 50 marks (Practicals 50)

Objectives:

1. Students able to Determine plate techniques
2. Students will understand the ability of bacteria enzyme.
3. To apply the knowledge of Microbiology and Pathology for nursing

Practicals:

Isolation of bacteria by streak plate technique, pour plate technique, Spread plate technique

a)To detect the ability of bacteria to produce amylase enzyme.

b) To detect the ability of bacteria to produce catalase enzyme.

To detect the ability of bacteria to produce caseinase enzyme

Direct Microscopic count of given bacterial suspension

Reference Books-

1. Stains and Staining procedures by Desai and Desai
2. Experimental Microbiology by Patel and Patel
3. Medical Microbiology by Cruickshank Vol.II
4. Bacteriological techniques by F.J. Baker
5. Experimental Microbiology by Rakesh Patel Vol. I and Vol. II

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – I, Semester - II
Nursing
Paper –XVIII: Internship/ Project Work-First Aid- II
Total Workload: 04 lectures per week of 60 min.
Distribution of Workload:

Practical: 04 lectures per week per batch

Total Marks: 50 marks (Practicals 50)

Internship in associated hospital for hands on training and Project work based on any one aspect / Problem related to syllabus.

Scheme of External Evaluation :-

c) Internship

3) Internship Report 15 Marks
4) Presentation and viva - Voce 10 Marks

d) Project Work

3) Project Report 15 Marks
4) Presentation and viva - Voce 10 Marks

II) Format of Internship Report

6. Introduction to Course and relevance of associated institutes
7. Objective of Internship
8. Schedule and Attendance of Internship
9. Detail Report on Hands on training regarding acquired skills
10. Conclusion

III) Project Design and Methodology

8. Introduction
9. Selection of Problem
10. Objectives
11. Statement of Problem / Project
12. Data Collection, Interpretation
13. Finding and Suggestions
14. Appendices, Bibliography

Note :

Guidelines for internship

1. Every candidate have to devote per day 2 hours in associated hospital.

2. Candidate has to write daily report of work done, and should maintain the daily dairy.

3. Candidate has to follow all the rules of associated institute / hospitals.

Guidelines for Project

1. Every candidate will be given the mentor for the project, she has to prepare the project work. under his/ her supervision

2. All candidates must have to follow the **Project Design and Methodology** format.