GUJARAT VIDYAPITH – AHMEDABAD
M.D. Gram Seva Mahavidyalaya, Sadra, Dist. Gandhinagar
Faculty of Science and Applied Science
Department of Home Science
Bachelor of Vocational (Food Processing Technology)

Revised Course Structure Year 2018

B.Voc. Degree Course

in

FOOD PROCESSING TECHNOLOGY

under

CREDIT AND SEMESTER SYSTEM AND GRADING
Scheme for the Distribution of Credits, Period of
Instruction and Syllabus

The University Grants Commission (UGC) has launched a scheme on skills development based higher education as part of college/university education, leading to Bachelor of Vocation (B.Voc.) Degree with multiple exits such as Diploma/Advanced Diploma under the NSQF. The B.Voc. programme is focused on universities and colleges providing undergraduate studies which would also incorporate specific job roles and their NOSs along with broad based general education. This would enable the graduates completing B.Voc. to make a meaningful participation in accelerating India’s economy by gaining appropriate employment, becoming entrepreneurs and creating appropriate knowledge.

The main objectives of the scheme are:

To provide judicious mix of skills relating to a profession and appropriate content of General Education.

To ensure that the students have adequate knowledge and skills, so that they are work ready at each exit point of the programme.

To provide flexibility to the students by means of pre-defined entry and multiple exit points.

To integrate NSQF within the undergraduate level of higher education in order to enhance employability of the graduates and meet industry requirements. Such graduates apart from meeting the needs of local
and national industry are also expected to be equipped to become part of the global workforce.
To provide vertical mobility to students coming out of 10+2 with vocational subjects.

**OBJECTIVES OF THE B.Voc. COURSE IN FOOD PROCESSING TECHNOLOGY**

To empower the students with the professional competence and expertise of food processing technology.

To enable the students to understand food composition and its physicochemical, nutritional, microbiological and sensory aspects.

To familiarize the students about the processing and preservation techniques of food products.

To emphasize the importance of food safety, food quality, food plant sanitation, food laws and regulations, food engineering and packaging in food industry.

**ELIGIBILITY**

A pass in plus-two (General group) or equivalent examinations (V.H.S.C.) recognized by the University.

**DURATION OF THE COURSE**

The course will be a six semester full time programme extending three academic years consisting of 90 working days of instruction in each semester including examination.

**PROGRAMME**

The programme is grouped under the Model III - New Generation Courses.

**COURSE STRUCTURE**

The curriculum is a suitable mix of General Education and Skill Development components. The General Education components emphasize and offer courses which provide holistic development. The focus of Skill Development components is to equip students with appropriate knowledge, practice and attitude, so as to become work ready. While designing the curriculum of Skill Development components, adequate attention has been given to practical work, industrial visit, internship, development of student portfolios and project work.

**COURSE**

The diploma has 26 skill development courses, 20 general education courses, one choice based course, one open course, 6 skill development internships and one skill development project. The total credits is 180 for the entire programme.

(One Credit is equivalent to 18 periods of 60 minutes each, for theory, workshops/labs and tutorials. For internship/field work, the credit weightage for equivalent hours shall be 50% of that for lectures/workshops.)

**COURSE CODE**

The following methodology is adopted for course codes.
( FPT-Food Processing Technology, HOR- Horticulture, EES-Energy and Environmental Studies, 1-First
Semester, S-Skill Development, 1T-First Theory Paper, 2T- Second Theory Paper, P-Practical, G-General Education, I-Internship / training.)

EXAMINATIONS
The evaluation of each course shall contain two parts such as internal or In-Semester Assessment (ISA) and External or End-Semester Assessment (ESA). The external examination of all semesters shall be conducted at the end of each semester. Internal evaluation is to be done by continuous assessment. The ratio between internal and external examinations shall be 1:4. There shall be a maximum of 80 marks for external evaluation and maximum of 20 marks for internal evaluation. For all courses (theory & practical), grades are given on a 07-point scale based on the total percentage of marks. \((ISA + ESA)\) as given below.

<table>
<thead>
<tr>
<th>Percentage of Marks</th>
<th>Grade</th>
<th>Grade Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 and above</td>
<td>A+ - Outstanding</td>
<td>10</td>
</tr>
<tr>
<td>80-89</td>
<td>A-Excellent</td>
<td>9</td>
</tr>
<tr>
<td>70-79</td>
<td>B-Very Good</td>
<td>8</td>
</tr>
<tr>
<td>60-69</td>
<td>C-Good</td>
<td>7</td>
</tr>
<tr>
<td>50-59</td>
<td>D-Satisfactory</td>
<td>6</td>
</tr>
<tr>
<td>40-49</td>
<td>E-Adequate</td>
<td>5</td>
</tr>
<tr>
<td>Below 40</td>
<td>F-Failure</td>
<td>4</td>
</tr>
</tbody>
</table>

Note : Decimal are to be rounded to the next whole number

Marks distribution for external and internal assessments and the components for internal evaluation with their marks are shown below :

**For All course without practical:**

<table>
<thead>
<tr>
<th>Components of Internal Evaluation</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance</td>
<td>10</td>
</tr>
<tr>
<td>Assignment/Seminar/Viva</td>
<td>10</td>
</tr>
<tr>
<td>Test Paper(s) (1 or 2)</td>
<td>20</td>
</tr>
<tr>
<td>((1 \times 10 = 10; 2 \times 5 = 10))</td>
<td></td>
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<tr>
<td>Total</td>
<td>40</td>
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</table>

**For all course with practical:**

<table>
<thead>
<tr>
<th>Components of Theory- Internal Evaluation</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance</td>
<td>3</td>
</tr>
<tr>
<td>Assignment</td>
<td>2</td>
</tr>
<tr>
<td>Test paper(s) (1 or 2)</td>
<td>5</td>
</tr>
<tr>
<td>((1 \times 5 =5; 2 \times 2.5 = 5))</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
</tr>
</tbody>
</table>
Marks of Practical – External Examination : 40
Marks of Practical – Internal Evaluation : 20

<table>
<thead>
<tr>
<th>Components of Practical- Internal Evaluation</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance</td>
<td>4</td>
</tr>
<tr>
<td>Record</td>
<td>10</td>
</tr>
<tr>
<td>Lab involvement</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>20</strong></td>
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</table>

Attendance Evaluation:

**For all course without practical**

<table>
<thead>
<tr>
<th>% of attendance</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 and above</td>
<td>5</td>
</tr>
<tr>
<td>85-89</td>
<td>4</td>
</tr>
<tr>
<td>80-84</td>
<td>3</td>
</tr>
<tr>
<td>76-79</td>
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<tr>
<td>75</td>
<td>1</td>
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</table>

**For all courses with practical:**

<table>
<thead>
<tr>
<th>% of Attendance</th>
<th>Marks of Theory</th>
<th>% of Attendance</th>
<th>Marks for Practical</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 and above</td>
<td>3</td>
<td>90 and above</td>
<td>4</td>
</tr>
<tr>
<td>80-89</td>
<td>2</td>
<td>85-89</td>
<td>3</td>
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<tr>
<td>75-79</td>
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<td>80-84</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>75-79</td>
<td>1</td>
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</tbody>
</table>

Assignments:

Assignments are to be done from 1st to 4th Semesters. At least one assignment should be done in each semester.

Project Evaluation: (Max. marks 100)

<table>
<thead>
<tr>
<th>Components of Project- Evaluation</th>
<th>Marks</th>
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<tbody>
<tr>
<td>Internal Evaluation</td>
<td>20</td>
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<tr>
<td>Dissertation (External)</td>
<td>50</td>
</tr>
<tr>
<td>Viva – Voce (External)</td>
<td>30</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
</tr>
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</table>

Credit Point and Credit Point Average:

Grades for the different Semesters and overall Programme are given based on the corresponding CPA, as shown in below.

Credit point (CP) of a Course is calculated using the formula
CP = C X GP, where C = Credit; GP = Grade Point

Credit Point Average (CPA) of a Semester or Programme etc. is calculated using the formula.

\[ \text{CPA} = \frac{TCP}{TC}, \text{ Where TCP = Total Credit Point:} \]

TC = Total Credit
# GUJARAT VIDYAPITH – AHMEDABAD
Faculty of Science and Applied Science, Sadra, Dist. Gandhinagar
Department of Home Science
Bachelor of Vocational (Food Processing Technology)
**REVISED COURSE STRUCTURE**
(In Force from June-2018)

<table>
<thead>
<tr>
<th>Course- B-VOC-FPT</th>
<th>Sem-1</th>
<th>Sem-2</th>
<th>Sem-3</th>
<th>Sem-4</th>
<th>Sem-5</th>
<th>Sem-6</th>
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<tbody>
<tr>
<td>CORE</td>
<td>FPT-101</td>
<td>FPT-201</td>
<td>FPT-301</td>
<td>FPT-401</td>
<td>FPT-501</td>
<td>FPT-601</td>
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<tr>
<td></td>
<td>FPT-102</td>
<td>FPT-202</td>
<td>FPT-302</td>
<td>FPT-402</td>
<td>FPT-502</td>
<td>FPT-602</td>
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<td>FPT-103</td>
<td>FPT-203</td>
<td>FPT-303</td>
<td>FPT-403</td>
<td>FPT-503</td>
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<td>FPT-404</td>
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<td>FPT-604</td>
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<td><strong>OBSERVATION</strong></td>
<td>13.5</td>
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<td>18</td>
<td>18</td>
<td>13.5</td>
<td>13.5</td>
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<tr>
<td>DISCIPLINE SPECIFIC ELECTIVE</td>
<td>DSE 301: FOOD SCIENCE</td>
<td>DSE 401: BASIC BIO CHEMISTRY</td>
<td>DSE 501: FOOD BIO CHEMISTRY</td>
<td>DSE 601: NUTRITION HEALTH COMMUNICATION</td>
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<tr>
<td>GENERIC ELECTIVE</td>
<td>GE 101 HINDI VINEET</td>
<td>GE 201 FOOD AND NUTRITION</td>
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<td></td>
<td>GE 102 HUMAN NUTRITION</td>
<td>GE 202 FOOD PRESERVATION TECHNOLOGIES</td>
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<td></td>
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<tr>
<td>GANDHIAN THOUGHT</td>
<td>GT 101 GANDHIAN THOUGHTS</td>
<td>ENV 201 ENVIRONMENTAL STUDY</td>
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<table>
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<tr>
<th>ABILITY ENHANCEMENT</th>
<th>ENG 101</th>
<th>ENG 201</th>
<th>ENG 301</th>
<th>ENG 401</th>
<th>ENG 501</th>
<th>ENG 601</th>
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<table>
<thead>
<tr>
<th>SKILL ENHANCEMENT</th>
<th>UDY 101</th>
<th>UDY 201</th>
<th>UDY 301</th>
<th>UDY 401</th>
<th>UDY 501</th>
<th>UDY 601</th>
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</thead>
<tbody>
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<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

| GENERIC ELECTIVE | 23.5    | 23.5    | 26.5    | 26.5    | 22      | 22      |

GE-101-HINDI VINEET

GE-102-HUMAN NUTRITION

GE-201-FOOD AND NUTRITION

GE-202-PRESERVATION TECHNIQUES
Objectives
To deliver a sequence of steps to produce an acceptable and quality food product from raw materials.
Study of scientific and technological advancements in food processing.

Unit-1. Classification of Food
Definition of food, classification of foods- based on origin, pH, nutritive value, functions of food, Health food, ethnic food, organic food, functional food, nutraceuticals, fabricated foods, convenience foods, GM food and space foods.

Unit-2. Fundamentals of Food Processing
Steps involved in converting a raw harvested food materials to a preserved product with sound quality- harvesting, storage, manufacturing, preservation, packaging, distribution and marketing.

Unit-3. Post Harvest Management
Chemical, enzymatic, physical and biological deterioration, implications and prevention. Banana products- banana puree, banana chips, banana powder, Banana figs, banana flour; Tapioca products- Tapioca chips, tapioca powder; Fermented Products- Dosa, Idli, Appam, Vada. Pasta, Macaroni, Noodles, Mayonnaise, Salad Dressing, Margarine, Potato wafers, Potato chips, Corn flakes, Popcorn.

Text Books:
Brian E. Grimwood, Coconut Palm Products: Their Processing in Developing Countries, 1979.
Hui, Y H and Associate Editors; Hand Book of Food Products Manufacturing Vol II, wiley- Interscince, New Jersey 2007.
GUJARAT VIDYAPITH – AHMEDABAD  
Faculty of Science and Applied Science, Sadra, Dist. Gandhinagar  
Department of Home Science  
B.Voc. (Food Processing Technology) SEMESTER-I  
FPT-101 BASIC PRINCIPLES OF FOOD PROCESSING- Practical  
Revised Course Structure - (In force from June 2018)  
(External Evaluation 60% + Internal Evaluation :40%)  
(Total Teaching hours= 45 , Credit :1.5)  

Objectives  
To deliver a sequence of steps to produce an acceptable and quality food product from raw materials.  
Study of scientific and technological advancements in food processing.  

FPT-101  
• Grouping of Food – Discussion on Nutritive Values.  
• Techniques in measurements of Food Staff use of standard we raring caps and spoons, wrights volume, relationships.  
• Survey locally available foods and identify and find the cost of food staff.  
• Find the edible and non edible portions of Food.  
• Give the energy and protein value per 100 gm of food selecting from all food groups.  
• Prepair the following food and its processing.  
• Ethnic food – Banana Products.  
• Mordern Food – Pasta Marconi  
• Tapioca Food
GUJARAT VIDYAPITH – AHMEDABAD  
Faculty of Science and Applied Science, Sadra, Dist. Gandhinagar  
Department of Home Science  
B.Voc. (Food Processing Technology) SEMESTER-I  
FPT-102 -BASIC PRINCIPLES OF FOOD PRESERVATION  
Revised Course Structure - (In force from June 2018)  
(External Evaluation 60% + Internal Evaluation :40%)  
(Total Teaching hours= 45 , Credit :3)

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-1. Food Spoilage, Basic Principles of Food Preservation  
Food spoilage- definition, types of spoilage- physical, chemical and biological. 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-2. Preservation by use of High, Low Temperature  
Pasteurization, sterilization, canning- history and steps involved, types of cans and bottles.  
Spoilage encountered. Refrigeration- Advantages, mechanism of refrigeration factors to be considered during chilling, difference between refrigeration and freezing, methods of freezing, steps involved in freezing, types of freezing, common spoilage during freezing.

Unit-3. 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.

Text Books:
Potter, N.N. and Hotchkiss J. H. Food Science. CBS publishers and distributors. 1996.  
Cruess, W.V. Commercial fruits and vegetable products, Anees Offset press, New Delhi.
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.

Prepair Following receipes.
Jam, Jellies
Tomato Ketchup and tomato Sauce.
Mango Pickle, Lime Pickle, Mixed Vegetable Pickle.
Crushes, Squashes and Syrups.
Papad, Dehydrated Vegetables.

Food Spoilage:
Find the properties Physical, Chemical, Biological
Give the Irradiation, Fermentation.
Preservation by High Temperature.
Sterilization
Canning
Bottles
Preservation by Low Temperature.
Refrigation.
Types of Freezing.
Preservation of Food Samples arising humectants.
Objectives
To acquaint various functional chemical constituents of food.

To build a relationship between the dynamic forces of food and the dynamic forces of digestion and growth.

Unit-1. Introduction, Carbohydrates and its classification
Introduction to chemistry of foods composition and factors affecting foods, chemistry of water, water activity, moisture determination. Properties and classification, starch, cellulose, pectic substances, enzymes and its use in foods, gel formation and starch degradation, dextrinization,

Unit 2. Enzymes, Vitamins & Minerals

Unit-3. Proteins, Oils and Fats
Classification, physical and chemical properties of proteins and amino acids, confirmation, functional properties, hydrolysis of proteins, changes of proteins during processing. Classification, composition, physical and chemical properties, hydrolysis, hydrogenation, rancidity and flavor reversion, winterization, refining of oils, rendering, emulsions.

Text books:
1. Standardization of Solutions
   Standardization of Fehling’s solution.
   Standardization of Sodium hydroxide with standard oxalic acid.

2. Estimation of Sugar Solutions
   Estimation of Glucose by Lane and Eynon’s method.
   Estimation of Sucrose by Lane and Eynon’s method.
   Estimation of Aldose by Willstalter’s Iodometric titration
   Estimation of starch.

3. Estimation of Protein
   Kjeldhal method.
   Biuret method
   Lowry’s method

4. Estimation of Vitamin.
   Estimation of vitamin C

5. Qualitative Test
   Qualitative tests for carbohydrates
   Qualitative tests for proteins.

Text books:
GUJARAT VIDYAPITH – AHMEDABAD
Faculty of Science and Applied Science, Sadra, Dist. Gandhinagar
Department of Home Science
B.Voc. (Food Processing Technology) SEMESTER-I
GT 101- Gandhian Thoughts
Revised Course Structure - (In force from June 2018)
(External Evaluation 60% + Internal Evaluation :40%)
(Total Teaching hours= 30, Credit :2)

अंक १ मंगलप्रभात

1.1 व्रत चेतले शुं? व्रतनी आवश्यकता
1.2 अंकार्दश व्रत
शारदाव व्रत - यम: सत्य, अहिंसा, अस्तेय, वृहवध, अपरिवर्जु
देशकाली विधिविधा पुमाण उमेला व्रतो - नीतम: अस्वाद, सर्वधर्म समावेश, जत्तमहेनत, अलय, अस्थृतात निवारण, स्वदेशी
1.3 जिवनमां व्रतनी महत्व

अंक २ रथनामक कार्यकम

2.1 रथनामक कार्यकम चेतले शुं?
2.2 रथनामक कार्यकम नी पुस्तुलता
2.3 चार्डी
चार्डीनो यतिनत्व
धरवधायक अने अंबल यथानाश परिवेश,
चार्डीनू महत्व (अमनू गौरव, गरीबो अने पेंसनी जीवाहोरी,
गामोध्याय मात्र चार्डी, चार्डी अने पर्यावरण, चार्डी अने आरोग्य)
2.4 व्यसन मुक्ति
व्यसन चेतले शुं? व्यसन चार, व्यसननी आरोग्य पर असार,
व्यसननी सामाजिक असार
व्यसन मुक्तिनार कार्यक्रमो

अंक ३ आयारनी केल्वडी

3.1 आयारनी केल्वडी अने तेनू महत्व
3.2 कुट्टमां सभूजज्ञवनसो आयार
3.3 शैक्षिक संस्थाओंमां सभूजज्ञवनसो आयार
3.4 જહેર સથિતિના રમ-રમાવ અને સચ્ચાદાન
3.5 સામાન્ય વિવેક

અંક ૪ ઉજાનાં તથા મહત્વ

૪.૧ ઉજાને બેટેલી શું?
૪.૨ ઉજાના સ્વરૂપ: યાંત્રિક ઉજા, શુભાંતિ ઉજા, રાસાયણિક ઉજા, ગુરુતવાક્ષ્યકીય ઉજા, નાલીય ઉજા, મોલા ઉજા, વિવૃત ઉજા
૪.૩ ઉજાના સ્થિત: પુન:પ્રાપય અને પુન:અપ્રાપય ઉજા સ્થિત
૪.૪ ઉજા બયત અને ગાંધીવિયાર
૪.૫ બીનપરંપરાગત ઉજાના સથાપન: સૂર્યકૃત, સોલાર હીટર, સોલાર પ્લેન, પાવનયકી, સૌર તળાવ, સૌરલાઇટ, બાયોગેસ, બાયોમાક્સ
બંચર
૪.૬ ઉજાનું સંરક્ષણ

સંદેહ પુસ્તકાંકો

૧ સમુદ્ર જીવનનો આયાર, ભયલાસાઈ મહત્તા
૨ આલોચની યાદી, ગાંધીજી
૩ માદી શામ માટે?, ગાંધીજી
૪ સમયોગ તસાહી: પુન:પ્રાપય ઉજા, પાછળમી આવૃતી, જેડા, વડીલો.
૫ મંગળપુલસ્ત - ગાંધીજી
૬ રથરનામક કાર્યક્ષેત્રો આજના સંદર્ભમાં - દશાર્થાલા શાહ
૭ રથરનામક કાર્યક્ષેત્રો: તનું રહસ્ય અને સંદર્ભ - ગાંધીજી
૮ પાલાપાળા સાથી- રામશેર સાબલિયા, CEE
૯ ગાંધીના પાવન પૂર્વસ્થ- લાલભાઇ મકનજી દેસાઇ
૧૦ “યુપ નષ્ટ રહેવાય” (ટૉલ્સ્ટોય ના નિવૃત્યનો અનુભાવ) નવજીવન પ્રકાશક મંદિર, 
અમદાબાદ
Objectives:

To read simple passages to find out information contained it.
To familiarize students with vocabulary used in the passages.
To familiarize students with the functions of tenses generally used in daily life.
To help students in writing short descriptive paragraphs based on pictures.

Unit 1: Comprehension and Vocabulary  (50%; 12 Hours)

The Kite Maker by Ruskin Bond
The Portrait of a Lady by Khushwant Singh
Print Advertisement – Admission Announcement
Print Advertisement – Sales Advertisement

Exercises:
Short questions
Fill in the blanks
Multiple choice questions based on the text
Antonyms/Synonyms
Match words with their meanings

NB: Short questions as well as other exercises should be informative in nature.

Unit 2: Grammar  (30%; 6 Hours)

Noun: Number and Gender
Articles
Simple Present Tense
Present Continuous Tense
Simple Past Tense
Past Continuous Tense
Subject-Verb Agreement

*NB: Unit 2 should be done along with Unit 1 so that students can see how these grammatical categories actually work to produce meaning.*

**Unit 3: Writing Skills**  (20%; 3 Hours)

1. Picture Reading (Use of Simple Present Tense and Present Continuous Tense)

*NB: Use at least five pictures in the classroom for demonstration as well as practice.*

**Unit 4: Academic Skills: Reference Skills**  (2 Hours)

- Types of dictionaries
- Functions of a dictionary
- How to use a dictionary?
- Optimum utilization of dictionary
- Dictionary and pronunciation
- How to use a thesaurus?
- Online dictionaries and thesaurus
- Inbuilt dictionaries in Word Processors
- Mobile dictionaries
- Guessing meaning from the context

*NB: This unit is not to be asked in the examination.*

**List of Reference Books:**


GUJARAT VIDYAPITH – AHMEDABAD
Faculty of Science and Applied Science, Sadra, Dist. Gandhinagar
Department of Home Science
B.Voc. (Food Processing Technology) SEMESTER-I
GE- 102 HUMAN NUTRITION
Revised Course Structure - (In force from June 2018)
(External Evaluation 60% + Internal Evaluation :40%)
(Total Teaching hours= 30 , Credit :2)

Unit 1: Basic Concepts in Human Nutrition
Basic terms used in nutrition • Understanding relationship between food, nutrition and health •
Functions of food-Physiological, psychological and social • Basic food groups and concept of balanced
diet

Unit 2: Nutrients, Vitamins and Minerals
Energy- Functions, sources and concept of energy balance. Functions, Recommended Dietary Allowances,
dietary sources, effects of deficiency and/ or excess consumption on health of the following nutrients:
• Carbohydrates and dietary fibre,
• Lipids
• Proteins
• Fat soluble vitamins-A, DX and K
• Water soluble vitamins – Thiamin, Riboflavin, Niacin, Pyridoxine, Folate Vitamin B12 and Vitamin C
• Minerals – Calcium, Iron, Zinc and Iodine

RECOMMENDED READINGS
Objectives

Students will be able to apply material balances and energy balances to the field of food engineering.

Students will be able to understand equipment used in the food industry.

Unit 1. Engineering Units
Dimensions – Primary, secondary, engineering units- Base units, derived and supplementary units System – state of system, extensive properties, Intensive properties.

Unit 2. Heat Transfer in Food Processing
Modes of heat transfer – conductive heat transfer, convective heat transfer, radiation heat transfer Systems for heating and cooling food products, plate heat exchanger, tubular heat exchanger, scraped surface heat exchanger, steam infusion heat exchanger.

Unit 3. Mechanical Operations and Separation, Irradiation
Mixing-different type of mixers used in food in industry, Clarification and concentration process-evaporation, diffusion concentration. Sedimentation, centrifugation, distillation, Filtration- batch filtration, continuous filtration, ultra filtration, reverse osmosis. Definition, principle, advantages and disadvantages, application of radiation in food industry, doses, effect of radiation in food- direct and indirect.

Text books:
GUJARAT VIDYAPITH – AHMEDABAD
Faculty of Science and Applied Science, Sadra, Dist. Gandhinagar
Department of Home Science
B.Voc. (Food Processing Technology) SEMESTER-II
FPT-201 BASIC PRINCIPLES OF FOOD ENGINEERING (Practical)
Revised Course Structure - (In force from June 2018)
(External Evaluation 60% + Internal Evaluation :40%)
(Total Teaching hours= 45 , Credit :1.5)

Objectives
Students will be able to apply material balances and energy balances to the field of food engineering.
Students will be able to understand equipment used in the food industry.

• Heat Transfer of Modes
• Mechanical peraitons with Equipment
• Visit and Field Trip of Related Industry.
Objectives

To attain knowledge regarding the use of additives in the food industry, laws related to food additives and to prevent the involuntary infringement of analytical procedures.

Unit-1. Introduction, Major Food Additives
Food additives, definition, objectives, functional classification, natural and synthetic additives, health and safety aspects of food additives. Preservatives- class I&II, antioxidants, Sweetners- natural and artificial, permitted food colours- natural and artificial, Food flavours – natural and artificial, Stabilizers and thickeners

Unit 2. Minor Food Additives.
Aerating agents, Antistaling agents, Bodying agents, Clouding agents, Curing agents, Clarifiers, Dietary supplements, Dietary fibre, Emulsifiers, Enzymes, Fat replacers, Leavening agents, Surfactants, Tenderizers, Texurizers, Thickners, Viscosity modifiers, Whipping agents

Unit-3. Food Laws and Standards
Food standards – Voluntary and mandatory food laws and Food Safety and Standards Act of India, 2006. Permitted level of food additives, present status of various food additives, controversial food additives, GRAS

Text books:

GUJARAT VIDYAPITH – AHMEDABAD  
Faculty of Science and Applied Science, Sadra, Dist. Gandhinagar  
Department of Home Science  
B.Voc. (Food Processing Technology) SEMESTER-II  
FPT-202 FOOD ADDITIVES (Practical)  
Revised Course Structure - (In force from June 2018)  
(External Evaluation 60% + Internal Evaluation :40%)  
(Total Teaching hours= 45 , Credit :1.5)

Objectives

To attain knowledge regarding the use of additives in the food industry, laws related to food additives and to prevent the involuntary infringement of analytical procedures.

• Preservatives
• Natural
• Artificial
• Visit to various food and laws
• Standards
• Seminar and Visit Preservation
Objectives

Acquire an elementary knowledge about microorganisms.
Develop an understanding of industry and in maintenance of health.

Unit-1. Introduction to microbiology
Microbiology in daily life, Characteristics and morphology of bacteria, fungi, virus, protozoa & algae.
SCP- Microorganisms used, raw materials used as substrate,

Unit 2. Microbial Growth, Beneficial microorganisms
Condition for growth and production, nutritive value and use of SCP Microorganisms of industrial importance, biomass, fermentation, enzymes & hormones, Antibiotics & vaccines, Microorganisms & effluent treatment

Unit-3. Cultures and Media, Food Borne Diseases
Growth curve, Effect of pH, Water activity, O2 availability & temperature on the growth of microorganisms. Different type of media- Selective media and differential media; Preparation of media-
PDA media, Nutrient agar, Mac Conkey agar, Culturing techniques- Spread plate and streak plate, pour plate. Food intoxication- Staphylococcal intoxication, botulism, Food infection- Salmonellosis, Clostridium perfringens, Bacillus cereus gastroenteritis, E. coli infection and others

Text books:
Khetarpaul, N. Food microbiology, Daya publishing house, New Delhi, 2009


Objectives

To study the basic rules and requirements of a microbiology laboratory.

Give emphasis towards the preparation of biological stains, reagents, media and their composition.

To get thorough different methods for staining of microorganisms.

Microbiology laboratory basic rules and requirements

Laboratory rules- basic rules of a microbiology lab, basic requirements of a microbiological lab- common glass ware; test tube, culture tube and screw capped tubes, Petri dish, pipette, Pasteur pipette, glass spreader, inoculation needle, Bunsen burner, water bath, autoclave, laminar air flow, incubator, hot air oven, Quebec colony counter, centrifuge, microscope. Disposal of laboratory waste and culture.

Staining of microorganisms and Demonstration of techniques for pure culture of microorganisms, Composition, preparation and sterilization of media

Methods for detection of specific bacteria: wet mount preparation for motile bacteria, hanging drop mount method, Methods for staining of micro organism: Simple staining (Monochrome staining) Gram staining for differentiation of bacteria Negative staining of bacteria Endospore staining. Streak plate method, Pour plate method, Serial dilution agar plate method. PDA media Nutrient agar media Mac-Conkey agar media

Microbiology of milk:

Enzymatic test of milk by methylene blue reductase test, quality testing of milk by resazurin test, determination of phosphatase activity of milk, detection of mastitis through milk test. Micribniology of Fruit, Vegetable, Canned Food, Spiees, Baverages,

Text Books:

Objectives:
Student will able to understand nutrition and health.
To know about nutrients and dietary function of human body.

Unit 1:
Concept of food and Nutrition
Definition of terms nutrition, malnutrition, health and nutritional status, Functions of food, nutrients supplied by food, Nutrients (Sources, Functions, digestion, Absorption, assimilation and transport of carbohydrates, proteins and fats in human beings)

Unit 2:
Nutritive value of planned diet RDA (For Man and Women) of Nutrients , RDA (For Man and Women) Food stuffs, Sample meal plan for adult, Low cost snacks, Nutrition/Health problems adolescents.

References
Objectives

Student will able to understand preservation techniques
To know about food preservation and reduction of their waste.

Unit 1:

Importance of preservation.
Different Preservation Methods.
Role of food preservation in present Scenario.

Unit 2:

Different types of food preservation.
Natural.
Artificial.
Organic.
Inorganic.

Text Books:

Cruess, W.V. Commercial fruits and vegetable products, Anees Offset press, New Delhi.
એકમ ૧ - પવશ્યયહવિણે નો પરિયાય

(અ) પવશ્યયહવિણે: પવશ્યયહવિણે ઓટલે શું? પવશ્યયહવિણેના પ્રકાર: બૌલિક પવશ્યયહવિણે, જૈવિક પવશ્યયહવિણે, સામાજિક કે સંસ્કૃતિક પવશ્યયહવિણે, જૈવિક, જૈવાચારના વિવિધ વિભાગો, જૈમન્દા: સગલી જૈમન્દા, જલીય જૈમન્દા.

(બ) પવશ્યયહવિણેના જૈવિક વિવિધતાનો પરિયાય

જૈવિક વિવિધતા ઓટલે શું? જૈવિક વિવિધતાના પ્રકાર: પરિશ્રમિત તંત્રની વિવિધતા, જલભાગી જૈવિક વિવિધતા અને જીવનીય વિવિધતા. જૈવિક વિવિધતાનું મહત્તા, તેની સમાનો જિવસથાન

એકમ ૨ - કુદરતી સૌથી: જમીન અને જંગલો

10 કલાક

જમીન નિરોશ અને તેના પર અસર કરતા પરિભાષા, જમીન ઓટલે શું? તેના વિભાગો: સયમયજજિક જમીન અને અંતિ જમીન, જમીની જીવનસારી પવશ્યયહવિણે પર અસરો, જમીન ગુણધર્મો: જૈવિક ગુણધર્મો, બૌલિક ગુણધર્મો અને રાસાયણિક ગુણધર્મો, જીવ પ્રવેશ, જીવ પ્રવેશના પાંચ પગલથીયા. જંગલોનું મહત્તા, જંગલ વિનાસના કારણો અને તેને લખાવવાના ઉપયોગો.

એકમ ૩ - કુદરતી સૌથી: જિળ અને હવા

10 કલાક

(અ) જિળ: જિળનું મહત્તા, પાણીના ગુણધર્મો, પાણી સૌથી: જિલ્લામાં સહિત પાણીનું વગાડકર્ષક, મૂલાંક જિલ્લાપારીની અસરથી, તલાવ પાણી, શુદ્ધ પાણી, જૈવિક ઘરાણો, ઘરમાં પીવાનું પાણી શુદ્ધ રાખવાની સામાન્ય રીતો, પાણી અને રોગો, જિળ પ્રકારો, પાણીની સમસ્યાના સમસવશ્યયાત્મક ઉપયોગો

(બ) હવા: હવાનું મહત્તા, વાતાવરણ, વાતાવરણનું બંધાર્ણ, વાયુ પ્રકારો, ઓઝોન સ્તર, ગ્રીનહાઉસ અસર અને તેની પવશ્યયહવિણે પર અસરો, વાયુ પ્રકારો અટકાવવાના ઉપયોગો.

સંક્ષેપ પ્રમાણે

1. પવશ્યયહવિણે સાથી
2. પવશ્યયહવિણે અધયાય (પવશ્યયહવિણે અધયાયનું ભાવનિધિયાશાની સ્વરૂપ) - એ.જે.શે.બુમુડા
Objectives

To read different kinds of simple material to find out information contained in them.
To familiarize students with vocabulary used in the passages.
To acquaint students with vocabulary having multiple meanings.
To familiarize students with the functions of some of the tenses.
To orient students towards electronic communication.
To develop among students the academic skills of locating books and journals.

Unit 1: Comprehension and Vocabulary (50%; 10 Hours)

To Sir, with Love by E. R. Braithwaite
My Struggle for an Education by Booker T. Washington
Sample of Invitation Cards
Sample of Notices

Comprehension Pattern:
- Short questions
- Fill in the blanks
- Multiple choice questions based on the text
- Antonyms/Synonyms (Based on the comprehension texts only)
- Homophones and Homonyms

NB: Short questions as well as short notes should be informative in nature.

Unit 2: Grammar (20%; 5 Hours)

Pronouns (Detailed Study)
Present Perfect Tense
Present Perfect Continuous Tense
Past Perfect Tense
Past Perfect Continuous Tense
Unit 3: Writing Skills  (30%; 06 Hours)
  Writing Emails
  Describing an Experiment

NB: Only those experiments are to be considered which students undertake in their laboratory.

Unit 4: Academic Skills: Reference Skills  (02 Hours)
  Accessing Books and Journals in a Library
  Using Index of a book to locate specific information

NB: This unit is not to be asked in the examination.

List of Reference Books:
Objectives

To study the design of food process and food plant design, based on the established chemical process designed.

To discuss the various processing equipment on the basis of unit operations of mechanical processes.

Unit 1: Design and Selection of Food Processing Equipment,
Materials of construction—metals, steel, stainless steels, aluminium, copper, plastic, and glass, Fabrication of equipment—strength of construction, Fabrication and installation of equipment, hygienic design of food processing equipment.

Unit 2: Refrigeration and Freezing Equipment, Food Dehydration Equipment
Refrigeration—refrigeration cycle, compressors, evaporators, condensers, cooling equipment, hydrocooling, vacuum cooling, surface contact cooling, tunnel cooling, vacuum cooling freezing-air freezing, cold surface freezing, liquid freezing. Principles of drying, commercial food drying equipment—sun dryers, solar dryers, bin, silo and tower dryers, tray/cabinet dryers, tunnel dryers, rotary dryers, drum dryers, spray dryers, vacuum and freeze dryers.

Unit 3: Mechanical, Thermal Processing Equipment
Size reduction—cutting, crushing and grinding, size enlargement—agglomeration, homogenization—pressure homogenization, colloid mills, ultrasonic homogenizers, forming-extrusion and forming equipment. Canning—basic canning operations, batch sterilizers—still retorts, batch rotary sterilizers, crateless retorts, retorts for glass and flexible containers, continuous flow sterilizers—direct heating and indirect heating.

Textbooks:


GUJARAT VIDYAPITH – AHMEDABAD
Faculty of Science and Applied Science, Sadra, Dist. Gandhinagar
Department of Home Science
B.Voc. (Food Processing Technology) SEMESTER-III
FPT-301 FOOD PROCESSING MACHINERIES (Practical)
Revised Course Structure - (In force from June 2018)
(External Evaluation 60% + Internal Evaluation :40%)
(Total Teaching hours= 45 , Credit :1.5)

Objectives

To study the design of food process and food plant design, based on the established chemical process designed.

To discuss the various processing equipment on the basis of unit operations of mechanical processes.

- Hygienic Design of Good Processing Equipment
- Thermal Processing
- Refrigeration and Freezing
- Commercial Food Drying Equipments
- Dehydrated Process During Practical.
Objectives

To highlight the processing methods used in confectionary and culinary industries

Unit-1. Manufacture of Sugar, Bread Cake & Biscuit manufacturing
Sugarcane, gur, khandasari sugar, raw sugar, refined sugar, white sugar, beet sugar. Ingredients, role of ingredients, dough development, molding, proofing, knock-back, baking, packing. Processing of cake and biscuit- Ingredients, role of ingredients, development of batter, baking, packing.

Unit-2. Classification of confectionery
Sugar boiled confectionery- crystalline and amorphous confectionery, rock candy, hard candy, lemon drop, china balls, soft candy, lollypop, marshmallows, fondant, fudge, cream, caramel, toffee, lozenges, gumdrops, honeycomb candy.

Unit 3. Cocoa processing
Processing of cocoa, manufacture of chocolate- conching, enrobing, milk chocolate, white chocolate, dark chocolate, cocoa butter, wafer coated chocolate, fat bloom, cocoa powder.

Text books:
Objectives

To highlight the processing methods used in confectionary and culinary industries

- Process of Sugar
- Cake and Bread Making
- Biscuit Packing.
GUJARAT VIDYAPITH – AHMEDABAD
Faculty of Science and Applied Science, Sadra, Dist. Gandhinagar
Department of Home Science
B.Voc. (Food Processing Technology) SEMESTER-III
FPT-303 FOOD ADULTERATION TESTING
Revised Course Structure - (In force from June 2018)
(External Evaluation 60% + Internal Evaluation :40%)
(Total Teaching hours= 45 , Credit :3)

Objectives

To enable the students
To understand different sampling techniques employed in chemical analysis of foods.
To learn various chemical methods of food analysis.
To be familiar with adulteration test used for quality control

Unit-1. Food Adulteration
Definition, classification – intentional & incidental, health hazards caused by various adulterants and the critical level of metals in various foods, common adulterants in food and their testing.

Unit 2. Sampling techniques and Chemical analysis of moisture,
Population and sampling, importance of sampling, types of sampling, sampling plan, preparation of samples, problems in sampling. Moisture assay – oven drying methods, Karl Fischer titration, Toluene distillation method

Unit-3. Carbohydrates and protein, Chemical analysis of fat, vitamin C and minerals

Text books:


PFA ACT.
Objectives

To enable the students

To understand different sampling techniques employed in chemical analysis of foods.

To learn various chemical methods of food analysis.

To be familiar with adulteration test used for quality control

Food Testing

- Chemical
- Moisture
- Carbohydrate
- Protein
- Common

Adulteration Testing

- Food and Their Testing
Objectives

- To learn various processing aspects of food products having economic importance

Unit-1:
Detail Techniques of Processing Aspects.

Unit-2:
Milk and milk Processing, Fruit Product Detail and Write methods of Jack Fruit Products.

Unit-3:
Method of Making peanut butter importance of peanut butter and nutritive value.
New Innovation of Preparation of 5 product development list.

Text books:


GUJARAT VIDYAPITH – AHMEDABAD
Faculty of Science and Applied Science, Sadra, Dist. Gandhinagar
Department of Home Science
B.Voc. (Food Processing Technology) SEMESTER-III
FPT-304 FOOD PRODUCT DEVELOPMENT (Practical)
Revised Course Structure - (In force from June 2018)
(External Evaluation 60% + Internal Evaluation :40%)
(Total Teaching hours= 45 , Credit :1.5)

Objectives

- To learn various processing aspects of food products having economic importance

1. Manufacture of bread, biscuit and different types of cake.
2. Manufacture of different milk products.
3. Manufacture of jack fruit products.
4. Preparation of mayonnaise.
5. Preparation of peanut butter.
6. Preparation of potato chips and tapioca chips.
7. Preparation of RTS.
Objectives:

**Unit I: Introduction to food science, Chemistry, Microbiology**
- Definition, importance and applications
- Basic terminology used in food science
- Sources, chemistry and functional properties of Carbohydrates, Lipids and Proteins.
- Colloidal chemistry: Definition, classification, properties and applications of sols, gels, foams and emulsions.
- Introduction to yeast, mold and bacteria - Characteristics and their role in preservation and spoilage of food.
- Hygiene and sanitation practices in food processing and waste disposal.

**Unit II: Preservation techniques, principles and their applications**
- High temperature, low temperature, removal of moisture, irradiation and additives.
- Food packaging and labeling: FSSAI, Codex

**Text Book:**
- www.fssai.gov.in
GUJARAT VIDYAPITH – AHMEDABAD  
Faculty of Science and Applied Science, Sadra, Dist. Gandhinagar  
Department of Home Science  
B.Voc. (Food Processing Technology) SEMESTER-III  
DSE-301 Food Science (Practical) 
Revised Course Structure - (In force from June 2018)  
(External Evaluation 60% + Internal Evaluation :40%)  
(Total Teaching hours= 45 , Credit :1.5)  

Objectives:  
Applications and factors affecting formation of Sols, gels, foams and emulsions ii. Study of microscopic structure of different food starches and their gelatinization properties  

- Slide preparation and identification of bacteria yeast and mold ii. Assessment of hygienic practices of food handlers  
- Preservation of food using different methods (Blanching, Dehydration, Freezing) Basic principle involved in food preservation using additives  
- Sensory evaluation methods and their applications. Food analysis: Moisture, pH, acidity, Total soluble solids by refractometer.  
- Evaluation of Food labels  
-
Objectives

- To familiarize students with different genres of writings.
- To develop among students the comprehensive understanding of comprehension passages.
- To develop among students the skill of writing short notes which are informative in nature.
- To develop vocabulary which is used to describe a feature of a person or thing.
- To develop understanding of function of tenses in paragraphs.
- To develop official written communication skills needed by students and young scholars.
- To develop academic skills of comprehending texts and lectures/presentations.

Unit 1: Comprehension and Vocabulary  (50%: 10 Hours)

The Lucheon by W. Somerset Maugham
Vanar Jatakam by T. Vijayendra
The Fast by M.K. Gandhi

Comprehension:

- Short questions
- Short notes
- Fill in the blanks
- Antonyms/Synonyms (Based on the Comprehension texts)
- One Word Substitutes

NB: 1. Short questions as well as short notes should be informative in nature. 2. Teacher should provide a list of One Word Substitutes for the students.

Unit 2: Grammar  (20%; 7 Hours)

- Future Conditionals
- Adjectives (Detailed Study)
- Adverbs (Detailed Study)
- Prepositions

Unit 3: Writing Skills  (30%; 4 Hours)

- Leaving Short Messages (On Paper)
Composing SMS on Cell Phone
Formal Letter Writing (Asking for Leave, Scholarship, Complaint)
Formal Emails (Asking for Leave, Scholarship, Complaint)

**Unit 4: Academic Skills  (20%; 3 Hours)**

- Note-taking
- Note-making
- Summarizing

**List of Reference Books:**
GUJARAT VIDYAPITH – AHMEDABAD  
Faculty of Science and Applied Science, Sadra, Dist. Gandhinagar  
Department of Home Science  
B.Voc. (Food Processing Technology) SEMESTER-IV  
FPT-401 FATS AND OIL PROCESSING TECHNOLOGY  
Revised Course Structure - (In force from June 2018)  
(External Evaluation 60% + Internal Evaluation :40%)  
(Total Teaching hours= 45 , Credit :3)

Objectives
To enable the students  
To understand various aspects of oil processing technology employed in food industry.  
To learn various chemical and packaging of oils.

Unit-1. Introduction, Packing and storage  
Fats and oils, classification, properties, uses in food industry, shortenings, recent processing techniques.  
Packing, packaging materials, factors to be considered during packing, antioxidants, storage.

Unit-2. Processing of oil, Oil Extraction from Oil Seeds  
Steps involved in oil processing, oil extraction, methods of oil extraction, oil refining, hydrogenation,  
winterization, deodorizing, bleaching. Major and minor oil seeds, sources, examples, Extraction of oil  
from oil seeds, hydrogenated vegetable oils, margarine.

Unit 3. Fat Characterization  
Importance of fat analysis, refractive index, melting point, solid fat index, cold test, smoke, flash and fire  
points, iodine value, saponification number, acid value and free fatty acids, polar components in frying  
fats, lipid oxidation, peroxide value, Thiobarbituric acid test, Schaal Oven test, active oxygen method.

Text books:
  Lawson, G. L, Food oils and fats
  Fereidoon Shahidi, Functional properties of proteins and lipids
  Clyde, E. Stauffer, Fats and oils
Objectives

To enable the students

To understand various aspects of oil processing technology employed in food industry.

To learn various chemical and packaging of oils.

- Processing of Oil
- Packaging Techniques
- Storage Techniques
- Visit of Various related institutes.
Objectives
To give a general outline about the principles, structure and composition, economic importance and storage of different cereals, pulses and their products

Unit-1. Rice,

Unit 2. Wheat, Millets

Unit-3. Breakfast cereals Pulses
Definition, Nutritive value of breakfast cereals, and classification of breakfast cereals: uncooked breakfast cereals and ready to eat cereals: processing of ready –to-eat cereals (Batch cooking, continuous cooking and extrusion cookers) and products (flaked cereals, puffed cereals, shredded products, granular products). Introduction, composition, processing, utilization of pulses, toxic constituents of pulses, important pulses- Bengal gram, red gram, black gram, green gram, moth bean, lentil, horse gram, field bean, pea, khesari dhal, cluster bean, cow pea, kidney bean, soyabean- processing, fermented products of soyabean.

Text books:
David Dendy A.V, etal; Cereals and Cereal Products: Technology and Chemistry, - 2000
Potter, N.N. and Hotchkiss J. H. Food Science. CBS publishers and distributors. 1996.
Objectives

To give a general outline about the principles, structure and composition, economic importance and storage of different cereals, pulses and their products

- Nutritive value with added of Swaminathan
- Breakfast
- Cereals
- Continuous Cooking
- Extrusion
- Related products with syllabus.
Objectives
To Learn organic Processing
To know the importance of organic processing
To be innovative in exploring various conventionel products.

Unit 1. Organic farmic
Characteristics of organic food
Food is grown without Pesticides
Synthetic growth hormone
Petroleum based Hormones
Cloring
Food is processed without Artificial colous and flourous
Artificial Presentatives
Irradiation
GMOS.

Unit 2. Conventional Farming
Biopesticides
Organix Manares
Vermitechnology
Vermiculture
Advantage of organic farming
Limitations of Organic Farming

Unit 3. Certification of organic products & Research findings on organic food

Text Book:
Palmer Sharron-2006 organic food, today’s
Yenger David 2008, Got Organic Dietition
Organic Gardeing
Food Safety and Organic Agriculture
Vermi Composting
Organic food http://www.onri.org./Achtor/
Objectives

To Learn organic Processing
To know the importance of organic processing
To be innovative in exploring various conventional products.

- Vermi Technology
- Vermi Craftwise
- List of Organic Products
- Pesticides
Objectives
To know the importance of milk as an agricultural commodity
To be innovative in exploring various traditional and nontraditional milk products

Unit-1. Introduction, Indigenous Dairy Products

Unit-2. Milk Processing, Butter and Cream:

Unit 3. Cheese, Ice cream and condensed milk
Cheese: definition, classification, composition and nutritive value, Manufacture of cheddar cheese and cottage cheese, defects in cheese, their causes and prevention, uses of cheese. Ice-cream: Definition, composition and nutritive value, role of constituents, method of manufacture & storage. Uses of ice-cream, defects in ice-cream Condensed & Evaporated milk- processing.

Text books:
Godbole, N.N; Milk – The Most Perfect Food ; Biotechnology books, 2007
Spreer E and Mixa, A; Milk and Dairy Product Technology; Marcel Dekker, 2005
Sukumar De; Outlines of dairy technology; Oxford University Press; 2001
Objectives

To analyze the chemical constituents of milk as an agricultural commodity

To be innovative in exploring various traditional and nontraditional milk products

Analysis of milk

Estimation of acidity

Estimation of lactose

Estimation of protein by Sorenson formol titration

Estimation of milk fat

Adulteration testing- starch, cane sugar, water

2. Processing of ice cream

3. Manufacture of paneer

4. Manufacture of Rasogulla

5. Processing of gulab jamun
Objectives
To Enable the students
To understand the Basic biochemistry
To study importance of carbohydrates

Unit 1: Carbohydrate metabolism
Regulation of enzymes, Allosteric, covalent modification and gene expression, Carbohydrate Structures, Citric acid Cycle and ATP synthesis, Gluolysis and oxidation of pyruvate, Glycogenogenesis, Gluconeogenesis and the control of blood glucose.

Unit 2: Lipid Metabolism
Fatty acids, 13- oxidation of fatty acids, ketogenesis and ketosis

Text books
Pushpa Sundararaj and Anupa Siddhu. Qualitative tests and Quantitative procedures in Biochemistry, A H Wheeler and Co Ltd. 2002, New Delhi
Objectives
To Enable the students
To understand the Basic biochemistry
To study importance of carbohydrates

Carbohydrates:

- Qualitative tests for mono, di and polysaccharides and their identification in unknown mixtures
- Quantitative estimation of glucose, sucrose and lactose by titrimetric methods.
Objectives:

To develop the analytical skill while comprehending texts.
To develop scientific vocabulary generally used at the undergraduate levels.
To familiarize the students with grammatical category generally used in scientific writing.
To develop the scientific writing skills.
To familiarize students with different kinds of reading strategies based on the reading needs.

Unit 1: Comprehension and Vocabulary (40%; 10 Hours)
A Letter to Indira on her Birthday by Jawaharlal Nehru
It Takes a Thief by Arthur Miller

Exercises:
Short questions
Short descriptive questions
Antonyms/Synonyms (Based on the text)
Use of Scientific Vocabulary and Phrases

NB: 1. The questions asked will be of informative kind as well as analytical kind where a student has to think through the question keeping in mind the context of the text. 2. Scientific vocabulary and phrases should be taken from what students are using in other papers.

Unit 2: Grammar (10%; 4 Hours)
1. Passive Voice

Unit 3: Writing Skills (30%; 6 Hours)
Reporting Events
Describing the Process
Describing Charts/Pie-charts/Tables

NB: These writing skills should be done keeping in mind grammatical categories of tenses, prepositions, passive voice as well as linking words.

Unit 4: Academic Skills: Reading Skills (20%; 3 Hours)
Extensive Reading
Intensive Reading
Skimming
Scanning
SQ3R

*NB: Each of the reading techniques is to be demonstrated by relevant reading material made available to the students beforehand.*

**List of Reference Books:**


Objectives
To acquire knowledge about the selection of fruits for processing and value addition

To introduce the latest technologies, manufacturing processes and tools for effective control of safety and quality during processing

Unit 1. Introduction, Processing of juice, jam and jelly

Unit 2. Processing of tomato, apple and orange, Pineapple and Mango
Tomato juice, canned whole tomatoes, tomato ketchup, tomato jams, tomato puree, tomato powder. Apple and apple product- Clarified apple juice, aseptically packed apple puree, apple cider, orange products- orange juice, concentrated orange juice, orange squash, orange jams. Pineapple products- juice, jam, canning Mango and mango products- raw unripe mango products: brined mango slices, dried green mango slices and powder (Amchur), canned mango slices in syrup, canned or frozen mango pulp, mango juice or mango nectar, mango jam, mango squash, mango juice powder, mango freeze dried products, mango syrup.

Unit 3: Processing of vegetables
Processing of okra (ladies finger), potatoes, onions, carrots, green peas, procuring, transportation, storage, processing, packaging and ware housing.

Text books:
Siddappa and Bhatia, Fruits and Vegetable Processing Technology
Lea, R. A. W, Fruit juice processing and packaging
Hui, Y. H. Processing of fruits
Cash J. N. Processing of vegetables
Jongen, W. Fruit and vegetable processing
Objectives:

To be innovative in exploring various processed and value added from agricultural Commodities

1. Dehydration of carrot.
2. Processing of mango squash and mango pickle.
3. Processing of pineapple jam.
4. Manufacture of tomato puree.
5. Manufacture of lemon pickle and lemon juice.
6. Manufacture of tomato ketchup and tomato sauce.
7. Manufacture of tutifruity.
Objectives
To be familiar with different methods and materials used for packaging.

To understand the technology behind packaging.

Unit-1. Introduction to food packaging, Laws & Specifications
Definition, functions and requirements for effective packaging, packaging criteria. Classification of packaging- Primary, secondary and tertiary packaging. Flexible, rigid and Semi-rigid packaging.

Quality testing of packaging materials
- Paper & paper boards: thickness, bursting strength, grammage, puncture resistance, Cobbs test, tearing resistance.
- Flexible packaging materials (plastics): yield, density, tensile strength, elongation, impact resistance, WVTR, GTR, Overall Migration Rate, seal strength.
- Transportation hazards and testing.
- Oxygen interactions, moisture interchanges and aroma permeability.

Unit 2. Materials for food packaging
- Paper, Glass, Tin, Aluminium: TFS, Polymer coated tin free steel cans, cellophane, plastics-LDPE, HDPE, LLDPE, HMHDPE, Polypropylene, polystyrene, polyamide, polyester, polyvinyl chloride.

Unit-3. Different forms of food containers, Modern concepts of packaging technology

Text books:
- Gopal T.K.S. Seafood packaging. CIFT, Matsuapuri Cochin, 2007
GUJARAT VIDYAPITH – AHMEDABAD
Faculty of Science and Applied Science, Sadra, Dist. Gandhinagar
Department of Home Science
B.Voc. (Food Processing Technology) SEMESTER-V
FPT-502- FOOD PACKAGING (Practical)
Revised Course Structure - (In force from June 2018)
(External Evaluation 60% + Internal Evaluation :40%)
(Total Teaching hours= 45 , Credit: 1.5)

Objectives
To be familiar with different methods and materials used for packaging.

To understand the technology behind packaging.

• Food Technology Asepitic Packaging
• Quality Testing of Packaging Material
• Visit of Various Packing Industry
Objectives
To know about scope and milestone of food safety.

Unit-1:
Introduction to Microbiology: meaning, scope and milestone of microbiology: classification of microorganisms- their taxonomy and nomenclature, kingdom, morphology, growth and growth rate; methods in microbiology cultivation, isolation, purification and preservation of micro organisms; types of microscopes and their use; microbes as friends and foes-its destruction through sterilization and disinfection; bacteria and other micro-organisms;

Unit-2:
Food and water borne infections- bacterial, typhoid and para-typhoid fevers, cholera, shigellosis, food poisoning, poliomyelitis, giardiasis, intestinal helminthes; diseases transmitted through animal bites-Malaria, Filaria, Cat bite and rate bite fever, plague, Rabies, diseases through ARBO viruses; contact diseases

Text books:


Objectives

To know about scope and milestone of microbiology.

Microbiology laboratory instruments and their uses; practice of disinfection and sterilization methods; use of various microscopes and observation of various microorganisms; staining bacteria-simple staining method, differential staining method, negative staining method, special staining; isolation and identification of microorganisms.

Study of effect of ultra violet rays, PH, temperature, dyes, chemicals etc. on the growth of microorganism; antimicrobial effect of antibiotics-agar ditch method, agar cup method, paper disc method.

Examination of microorganisms in air, water, moldy bread, milk sewage; culture media; Examination of pathogenic Micro organisms; hanging drop preparation; bacterial cultivation preparation and sterilization of media, nutrient agar, inoculation, incubation.
Objectives
To know about scope and milestone of microbiology.

Unit-1:
Introduction to Microbiology: meaning, scope and milestone of microbiology: classification of microorganisms- their taxonomy and nomenclature, kingdom, morphology, growth and growth rate; methods in microbiology cultivation, isolation, purification and preservation of microorganisms; types of microscopes and their use; microbes as friends and foes-its destruction through sterilization and disinfection; bacteria and other micro-organisms.

Unit-2:
Food and water borne infections- bacterial, typhoid and para-typhoid fevers, cholera, shigellosis, food poisoning, poliomyelitis, giardiasis, intestinal helminthes; diseases transmitted through animal bites- Malaria, Filaria, Cat bite and rate bite fever, plague, Rabies, diseases through ARBO viruses; contact diseases
Objectives

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Microbiology laboratory instruments and their uses; practice of disinfection and sterilization methods; use of various microscopes and observation of various micro-organisms; staining bacteria-simple staining method, differential staining method, negative staining method, special staining; isolation and identification of microorganisms;

Study of effect of ultra violet rays, PH, temperature, dyes, chemicals etc. on the growth of micro-organism: antimicrobial effect of antibiotics-agar ditch method, agar cup method, paper disc method; Examination of microorganisms in air, water, moldy bread, milk sewage; culture media; examination of pathogenic micro organics; hanging drop preparation; bacterial cultivation-preparation and sterilization of media, nutrient agar, inoculation, incubation.
Objectives

Unit 1: Mechanism of enzyme action
Introduction to enzymes, Coenzymes, Regulation of enzymatic activity, enzyme kinetics, inhibition effects of pH, allosteric enzymes

Unit 2: Metabolism of proteins
Breakdown of proteins, transamination, deamination, decarboxylation, nitrogen fixation, Urea Cycle

Unit 3: Nucleic acid
Definition and composition of RNA and DNA, Structure of various components, viz. bases and sugars, hydrolysis of nucleic acid, structure of RNA and double helical structure of DNA
GUJARAT VIDYAPITH – AHMEDABAD
Faculty of Science and Applied Science, Sadra, Dist. Gandhinagar
Department of Home Science
B.Voc. (Food Processing Technology) SEMESTER-V

DSE 501- Food Biochemistry (Practical)
Revised Course Structure - (In force from June 2018)
(External Evaluation 60% + Internal Evaluation :40%)
(Total Teaching hours= 45, Credit: 1.5)

- Safety in biochemistry Laboratory
- To find specific activity of softening and sugar related enzymes from fruits
- Estimation of protein by lowery method
- Estimation of amino acid using biuret method
Objectives:

To appreciate literary writing and understand components of literary writings.
To develop skills of finding meaning from the context.
To develop the skill of oral presentation in formal setting.
To develop the skill of group discussion.
To develop the skill of different kinds of written business communications.
To develop the skill of writing project proposals.
To develop academic skills.

Unit 1: Comprehension and Vocabulary (30%: 09 Hours)

Sparrow by K. A. Abbas
The Model millionaire by Oscar Wilde
The Last Leaf by O. Henry

Exercises:

Short questions
Short notes
Antonyms/Synonyms
Guessing meaning from the context (Inferences)

Unit 2: Speaking Skills (20%: 06 Hours)

Delivering a Presentation
Group Discussion

Unit 3: Writing Skills (40%: 12 Hours)

Drafting Invitations – Formal and Informal
Preparing Travel Itinerary
Preparing Print Advertisements / Handbills
Designing a Brochure
Writing Project Reports

**Unit 5: Academic Skills  (10%; 03 Hours)**

Preparing Bibliography  
Rules of Citation  
Concept of Plagiarism

List of Reference Books:


Objectives
To enable the students
To understand the basics of nutraceuticals and functional foods.
To study the significance of nutraceuticals and their role in disease prevention.
To identify new strategies for marketing of traditionally known nutraceuticals.

Unit-1. Nutraceuticals: Historical, Teleological Aspects and Classification,
Introduction – Historical Reviews - Teleology of nutraceuticals -Organization models for nutraceuticals – Classification of Nutraceuticals based on the sources–Animal, Plant and Microbial – Nutraceuticals in specific foods - Mechanism of Action -Chemical nature.

Unit 2. Flavonoids and Carotenoids as Antioxidants
General background on phytochemicals as antioxidants – Flavonoids and Lipoprotein oxidation – Evidence for specific Antioxidant mechanisms of Flavonoids – Anticancer and Cholesterol-lowering effect of citrus flavonoids – Dietary carotenoid and carotenoid absorption – Approaches to measurement of absorption – Metabolism of Carotenoids – Carotenoids as anticancer agents.


Text books:
Objectives

To enable the students
To understand the basics of nutraceuticals and functional foods.
To study the significance of nutraceuticals and their role in disease prevention.
To identify new strategies for marketing of traditionally known nutraceuticals.

• Nutraceuticals Historical Reviews
• Specification of Food
• Omega
• Lycopene, Garlic, Olive Oils Nuts,
• Probiotics and Prebiotics
• Stability Testing
Objectives

To enable the students to get an up to date knowledge about fermented foods and beverages.

Unit-1. Introduction & Classification of Beverages
Introduction and classification of beverages, Mineral water-water source and deionization of mineral water, Water treatment process: Filtration, Adsorption, ion exchange, Chemical oxidation, Biological process, Remineralisation and microbiological treatments, Microbiology of bottled water.

Unit 2. Carbonated Beverages
Carbonated soft drinks- Ingredients and preservatives used in carbonation. Syrup room operation and equipments involved.

Unit-3. Tea & Coffee

Text books:
Nicholas Dege. Technology of Bottled water. Blackwell publishing Ltd. UK,.2011
Varnam A. H and Sutherland P.J., Beverages: Technology, Chemistry and Microbiology, Aspen Publications, 1999
Objectives

To enable the students to get an up to date knowledge about fermented foods and beverages.

- Classification of All Type Beverages
- Alcoholic Beverages
- Carbonated Beverages
- Black Tea, Green Tea
- Percolator Coffee
- Espresso Coffee
- Iced Coffee
- Instant Coffee
Objectives
To be familiar with different methods of drying.

To understand the technology behind drying

Unit-1. Introduction, Packing
Food dehydration, dehydration principles, selection of methods based on characteristics of foods to be produced, heat and mass transfer, difference between drying and dehydration. Packaging materials for dried foods, storage, transportation.

Unit-2. Mechanism of drying, Driers used in food industry, Drying curve, constant rate period, falling rate period, dry and wet bulb temperature, factors affecting dehydration, Physical and chemical changes during drying, Effect of food properties on dehydration, cell structure, case hardening, control of changes Drying methods, equipments, sun drying, air convection driers, kiln drier, cabinet drier, tunnel drier, fluidized bed drier, spray drier, drum drier, vacuum drier, freeze drier, advantages and disadvantages of different methods.

Unit 3. Processing of some Dehydrated foods
Processing of milk powder, raisins, osmotic dehydrated foods, intermediate moisture food, dehydrofreezing.

Text books:


Objectives

- To be familiar with different methods of drying.
- To understand the technology behind drying
- Visit of Dairies and Food Industries
- Processing from dehydrade foods
Objectives
To understand different aspects of sensory science and its application.

Unit-1. Introduction, Testing conditions
Sensory evaluation: Definition & Importance of sensory evaluation; Practical requirements for conducting sensory tests, limitations of sensory evaluation.
General testing conditions - Testing area, testing set up, lighting, testing schedule, Preparation of samples, sample coding, evaluation card preparation.

Unit-2. Sensory assessment, Sensory Tests
Taste—Taste sensation on the tongue, Recognition test for the four basic tastes, Water quality for sample preparations, Standard compounds used for preparing basic tastes, Taste modifiers, Perception of sweet taste.
Odour and Smell – Anatomy of nose, Smelling techniques, Vonskramlk, Test, Theories of olfaction
Texture—Definition, Classification of textural characteristics, glossary of textural terms, Definition for mechanical properties, Texture measurement Colour vision and appearance measurement-Structure of eye, Visual perception and colour of foods. Flavour and aroma - aroma perception, Definition of flavour, Flavour profile methods, Flavour compounds Temperature sensation, pain sensation, touch sensation, kinesthetic sensations, and sound sensations.

Unit 3. Data analysis
Threshold test, Difference test, Ranking test, Hedonic test, Acceptance and Preference test, scoring test, Sensitivity test Application of sensory analysis in food industry, trained panel members. Importance of data analysis, tests of significance, null hypothesis, mean, median, variance, standard deviation, t-test, chi-square test.

Text books:


Srilakshmi, B., Food Science., New Age International (P) Limited., New Delhi, 2001
Objectives

To understand different aspects of various sensory parameters and its application in food quality analysis.

The following tests will be done.

Triangle test
Single sample test
Paired comparison test
Duo-trio test
Hedonic rating test
Numerical scoring test
Ranking test
Overall acceptability
Flavor profile
Descriptive test
Objectives
To understand different aspects of sensory science and its application.

Unit 1: Concepts and Theories of Communication in Nutrition - Health, The Components and Processes of NHC

Definitions of concepts
- Formal - non-formal communication, Participatory communication
- Theories of NHC
- History, need and relevance of NHC in India
- Concept of Behavior Change Communication (BCC) from imparting information to focusing on changing practices.
- Components of BCC: Sender, Message, Channel, Receiver
- Various types of communication - interpersonal, mass media, visual, verbal/ non-verbal.
- Features of successful BCC
- Market Research and Social Marketing

Unit 2: Programs and Experiences of NHC global and Indian perspective • Nutrition - Health - Communication in Government Programs and NGOs

NHC in developed and developing nations: some examples
- Evolution of NHC in India: traditional folk media to modern methods of communication.
- Traditional folk media in Gujarat and its influence on NHC.
- Communication for urban and rural environment; for target specific audience.

Unit 3
Evolution of NHC/ IEC in Government nutrition health programs - shift in focus from knowledge gain to change in practices.
- Overview of NHC/IEC in government programs (Activities, strengths and limitations) - NHC in ICDS
  Nutritional counseling in micronutrient deficiency control programs: control of IDA, IDD, VAD.
- Strengths and limitations of NHC imparted in NGO programs

Text Book:
- Field guide to designing communication strategy, WHO publication-2007.
- Communication strategy to conserve/improve Public Health., John Hopkins University-Centre for Communication programmes.
- Harvard Institute of International Development (198 1) Nutrition Education in Developing Countries, New York: Oelgeschlager Gunn and Hain Publishers Inc.
GUJARAT VIDYAPITH – AHMEDABAD  
Faculty of Science and Applied Science, Sadra, Dist. Gandhinagar  
Department of Home Science  
B.Voc. (Food Processing Technology) SEMESTER-VI  
DSE 601 NUTRITION HEALTH COMMUNICATION (Practical)  
Revised Course Structure - (In force from June 2018)  
(External Evaluation 60% + Internal Evaluation :40%)  
(Total Teaching hours= 45, Credit: 1.5)

Objectives

To understand different aspects of sensory science and its application.

Visit to an ongoing NHC program in ICDS: one rural, one urban. (eg: matru mandal meeting or mahila mandal meeting or nutrition week celebration.
Visit to a health centre (ANC clinic run by Government health department and observe quality of counseling imparted to pregnant women (especially awareness of anemia, importance of IFA). [All the above will be assessed by the students for the plus and minus points from the NHC perspective].

Visit to Mamta Day (one rural one urban) and observe quality of counseling being given to pregnant and lactating women, mothers of preschool children, use of Mamta card and other aspects.

To visit an NGO either rural or urban and observe one NHC program implemented for women, school children or adolescence (For all the above observation appropriate observation check lists will be made and used)
Improving the NHC-To conduct brief interviews with service providers in all the above programs and to compare the observations, discuss the strength and weakness of the NHC activities carried out.

Based on the above observations and interviews
To design and plan NHC sessions on a specific nutrition topic for any vulnerable group: children, adolescents, women taking into account all components of NHC.
Submit the visual, the script of the session: Hindi / Gujarati, the communication strategy and evaluation plan.
To implement one NHC session in the field and evaluate it as per guidelines provided.
GUJARAT VIDYAPITH – AHMEDABAD
Faculty of Science and Applied Science, Sadra, Dist. Gandhinagar
Department of Home Science
B.Voc. (Food Processing Technology) SEMESTER-VI
ENGLISH 601
Revised Course Structure - (In force from June 2018)
(External Evaluation 60% + Internal Evaluation :40%)
(Total Teaching hours= 30, Credit: 2)

Unit 1: Word Formation  (20%; 6 Hours)
  Affixes (Prefixes and Suffixes)
  Clippings
  Abbreviations
  Compound Words
  Blending

Unit 2: Speaking Skills  (40%; 12 Hours)
  Conducting Interviews
  Appearing for Job Interviews
  Telephonic Conversations

Unit 3: Writing Skills  (40%; 12 Hours)
  Job Application Letter
  CV/Resume
  Resignation Letter
  Notice, Agenda, Minutes

List of Reference Books: