

THE AMERICAN COLLEGE, MADURAI – 625 002

Diploma in Food Processing & Preservation
B.Voc programme

Sem	Course No	Course Title	Hrs/wk	Cr.
I	General Education			
	END 1403	Conversational skills	4	4
	CSD 1403	Fundamentals of Computers	4	4
	LSD 1403	Fundamentals of Life Coping Skills	4	4
	Skill Component			
	DFP 1409	Fundamentals of Food Science	4	4
	DFP 1411	Food Processing and Preservation- I	4	4
	DFP 1113	Lab in Fundamentals of Food Science	10	10
	Job Training			
	DFP 1415	Internship I	120/sem	4
	Total			34

Sem	Course No	Course Title	Hrs/wk	Cr.
II	General Education			
	END 1404	Reading and Writing skills	4	4
	CSD 1404	Office Automation Tools	4	4
	LSD 1404	Performance and Life Coping Skills	4	4
	Skill Component			
	DFP 1410	Food Processing and Preservation- II	4	4
	DFP 1412	Food Packaging	4	4
	DFP 1114	Lab in Food Processing and Preservation	10	10
	Job Training			
	DFP 1416	Internship II	120/sem	4
	Total			34

- Theory / Lab Courses : 1 Credit = 15 hours / semester
- Internship: 1 Credit = 30 hours / semester

THE AMERICAN COLLEGE, MADURAI – 625 002

B.Voc. Degree Programme

Advance Diploma in Food Processing & Preservation

Sem	Course No	Course Title	Hrs/wk	Cr.
III	General Education			
	ENA 2403	Study skills	4	4
	CSA 2403	Operating Systems	4	4
	LSA 2403	Coping with Psychological and Physical Issues	4	4
	Skill Component			
	AFP 2401	Dairy Processing	4	4
	AFP 2403	Food Analysis	4	4
	AFP 21I5	Lab in Dairy Processing	10	10
	Job Training			
	AFP 2407	Internship III	120 /sem	4
	Total			34

Sem	Course No	Course Title	Hrs/wk	Cr.
IV	General Education			
	ENA 2404	Career Skills	4	4
	CSA 2404	Programming Techniques using C	4	4
	LSA 2404	Coping with Social and Environmental Issues	4	4
	Skill Component			
	AFP 2402	Processing and Preservation of Meat and Marine Products	4	4
	AFP 2404	Food Safety	4	4
	AFP 2116	Lab in Meat and Marine Products	10	10
	Job Training			
	AFP 2408	Internship IV	120/sem	4
	Total			34

- **Theory / Lab Courses : 1 Credit = 15 hours / semester**

- **Internship: 1 Credit = 30 hours / semester**

THE AMERICAN COLLEGE, MADURAI – 625 002

B.Voc. Degree Programme

Sem	Course No	Course Title	Hrs/wk	Cr.
V	General Education			
	EVS 3401	Environmental Studies	4	4
	LSV 3401	Entrepreneurship Development	4	4
	CSV 3401	Information and Communication Technology	4	4
	Skill Component			
	VFP 3401	Bakery & Confectionery	4	4
	VFP 3403	Food Service Management	4	4
	VFP 3115	Lab in Bakery, Confectionery and Food Service Management	10	10
	Job Training			
	VFP 3407	Internship V	120 /sem	4
	Total			34

Sem	Course No	Course Title	Hrs/wk	Cr.
VI	General Education			
	VEV3402	Youth in the Global Context – Value Education	4	4
	LSV3402	Soft Skills	4	4
	CSV3402	Data Base Management System	4	4
	Skill Component			
	VFP 3402	Food Adulteration	4	4
	VFP 3404	Food Quality Testing & Evaluation	4	4
	VFP 3116	Lab in Food Adulteration, Food Quality Testing & Evaluation	10	10
	Job Training			
	VFP 3408	Internship VI	120/sem	4
	Total			34

- **Theory / Lab Courses : 1 Credit = 15 hours / semester**
- **Internship: 1 Credit = 30 hours / semester**

B. Voc. Degree Programme (Food Processing & Preservation)

Programme Specific Outcomes (PSO)

1. Appreciate scientific principles and techniques of food processing and preservation.
2. Acquire skills to establish food service outlet.
3. Formulate environmental friendly and nutritious food products.
4. Develop analytical skills to be employed in industries.
5. Gain employment in central and state government sectors.
6. Competent to take up careers in academics, researches, health care, processing and preservation industries.
7. Develop skill to analyze food quality.
8. Derive strategies to promote healthy living.
9. Assess adulterants in food products.
10. Design safe packaging materials.

Mapping of PSO with PO

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
PSO1	✓									
PSO2		✓								
PSO3									✓	
PSO4		✓								
PSO5					✓					
PSO6				✓		✓				
PSO7		✓								
PSO8										✓
PSO9									✓	
PSO10									✓	

Mapping of Course Outcomes (COs) with Programme Specific Outcomes (PSOs)

Course Title	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
DFP 1409	X		X		X		X	X		
DFP 1411	X		X	X						
DFP 1113	X	X	X	X				X		
DFP 1410	X		X	X				X		
DFP 1412	X			X			X	X		X
DFP 1114						X	X			
AFP 2401	X			X				X		X
AFP 2403		X	X	X	X		X			
AFP 2105	X		X	X	X		X			
AFP 2402	X	X				X	X	X		
AFP 2404	X	X		X	X	X				
AFP2106	X	X		X		X				X
VFP3401	X	X		X			X			
VFP3403	X	X	X	X		X		X		
VFP3105	X	X		X	X		X	X		
VFP3402	X				X		X	X	X	
VFP3404		X		X	X	X			X	
VFP3106		X	X	X	X			X		

END 1401

[ConSkills]

Conversational Skills**(3h/wk) (2Cr)**

The Course aims at helping students converse in English on the matters that matter to them in daily life. It provides the learners with ample opportunities and social contexts through conversations so that they can freely and fluently use informal English. It also exposes them to the apt vocabulary of such informal conversations.

Course Outcomes

At the end of the course, student will be able to:

- i. articulate spoken utterances clearly and fluently,
- ii. speak simple sentences in English with one another in unpredictable situations,
- iii. participate in dyadic communication,
- iv. use phatic communion, and
- v. employ word-stress and intonation in spoken utterances.

Unit 1 : Conversational skills

Unit 2 : Day-to-day matters like eating, emotions, fashion, health, money, romance, housing, job, faith & hope, busy life, memory, shopping, time, Traffic, travelling, vacation, weather

Unit 3 : Social expressions

Unit 4 : English sounds

Unit 5 : English accent and intonation

Textbook

Sekar, J. J. (2014). Conversational Skills. Madurai. Department of English, The American College.

	K1	K2	K3	K4	K5	K6
CO 1				3		
CO 2						6
CO 3						6
CO 4						6
CO 5			3			

Mean: 4.8

Course Outcomes

At the end of the course the student will be able to:

- i. Classify the Generations of a Computer and its applications.
- ii. Recall the components of a Computer.
- iii. Analyze Primary and Secondary storage devices.
- iv. Use Data representation methods.
- v. Develop Data Conversion examples.

Unit I: Introduction to computers Generations of computers –components of computer hardware – software -classification of computers – advantages and limitations – applications of computer

Unit II: Components of the Computer CPU - I/O devices – Types and Features.

Unit III: Computer Memory Primary memory – secondary memory-auxiliary storage devices– cache memory CD – DVD –Pen drive – backup.

Unit IV: Data representation Data – Meaning - Information –Representation - files - Computer words.

Unit V: Number Systems in computer Decimal, Binary, Octal and Hexa Decimal - Representation - Conversions.

Text book:

Alphonse X, ICRDCE publication, December 2011.

Reference:

Curtin, D. P. Foley, K.Kunalsen, Morin.C “Information Technology- The Breaking Wave”, TataMcGraw Hill, 2002.

Blooms's Taxonomy	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5
	CO1	CO2	CO3	CO4	CO5
K 1: Remembering		2			
K 2: Understanding	1				
K 3: Applying				4	5
K 4: Analysing			3		
K 5: Evaluating					
K 6: Creating					

FUNDAMENTALS OF LIFE COPING SKILLS

LSA 1203

2 hrs/Wk – 2 Credits

Objectives: *To prepare the students through the fundamentals of life coping skills for better citizens. To make them sociable and help them develop their personality. Understanding the need for self transformation which will guide them throughout their life in handling relationships and life challenges. To enlighten them with the necessity of learning communication and negotiation skills for achieving greater heights in their personal life and their career.*

Unit - I Introduction to Skills

Introduction to skills – Definition of Coping - Social Skills – Four levels: Foundation, Interactive, Affective, Cognitive – Understanding Body Language

Unit - II Personality Development

Definition of Personality – Characteristics of Personality – Ways to develop personality – Personality types – Four basic temperament

Unit - III Self Transformation

Self Identity – Self Concept – Self acceptance – Self discovery – Self Esteem: High & Low Self esteem – Johari Window

Unit - IV Communication Skills

Understanding communication – Types of communication – Patterns of communication – Importance of communication – Effective & Efficient communication

Unit - IV Assertive Skills

Assertive Behaviour – Benefits of being Assertive – Types of Assertion – Assertion rights – Developing assertive skill

Books for Reference:

1. Alphonse, X. 2011, “We shall overcome” A Text book on Life coping skills”, ICRDCE Publication, Chennai
2. AIACHE Publication 2014, New Delhi, “Human Values Development”

Course Outcome: At the end of this course the student will be able,

CO1: To demonstrate how to be sociable in all demanding situations

CO2: To prepare themselves a better personality through self transformation

CO3: To identify need and importance of an effective and efficient communicator

CO4: To apply the assertive skill techniques in the appropriate life situations

CO5: To formulate personal principles based on the fundamentals of life coping skills

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5
Bloom's Taxonomy	CO1	CO2	CO3	CO4	CO5
K1: Remembering			3		
K2: Understanding		2			
K3: Applying	1				
K4: Analyzing				4	
K5: Evaluating					
K6: Creating					5

This course deals with the basic understanding on cookery science. It includes basics of food Science, cereal & pulse cookery, milk cookery, meat, poultry & fish cookery and sugar cookery.

Course Outcomes

Upon completion of this course, the students will be able to:

- i. Outline the basics of food science.
- ii. Discuss the processing of cereals and pulses.
- iii. Assess the different processing methods for milk and milk products.
- iv. Explain the processing of meat, poultry and fish.
- v. Analyze on the various compounds of sugar cookery.

- 1. Basics of food science:** Definition for Food, Food Science - Functions of Food- Food Groups – Food Guide Pyramid - objectives of cooking- Preliminary preparation (Cleaning, peeling, Stringing, Cutting, Grating, Sieving, Chopping, Soaking Coating, Blanching, Grinding, Marinating)- cooking methods. Moist heat and dry heat methods, advantages and disadvantages. Micro-wave cooking, Solar cooking - advantages and disadvantages.
- 2. Cereals and pulses:** Cereals - wheat and rice - structure, composition and Nutritive value -milling - by products of wheat and rice, parboiling - methods, advantages, Effect of cooking on the nutritive value of cereals, Gelatinisation, Dextrinization, gluten formation. Millets - Ragi, Bajra, Italian millet, Varagu, Samai-Composition, Nutritive value. Pulses - Composition and Nutritive value, Germination, Effect of cooking on pulses, factors affecting cooking quality of pulses, role of pulses in cookery.
- 3. Fats, Oils and Sugar** – Composition, nutritive value, Rancidity, Hydrogenation, role of fat in cookery, effect of heating, factors affecting absorption of fats, smoking point Rancidity-Types, Prevention. Sugar: Nutritive value, properties,. Sugar - Nutritive value, properties, Types of sugars, stages in sugar cookery, role of sugar in cookery.
- 4. Milk and Milk products** - composition and Nutritive value, physical properties of milk, Different types of milk and milk products, role of milk and milk products in cookery.
- 5. Fruits and Vegetables** - Composition, classification, nutritive value, pigments in fruits and vegetables and effect of cooking on pigments. enzymatic browning, role in cookery.

Text Books:

1. Srilakshmi B (2005) Dietetics. New Age International Publishers, New Delhi.
2. Swaminathan M (1979) Food Science and Experimental foods. Ganesh and Co, Madras.
3. Mudambi SR and Rao SM (1986) Food Science. Wiley Eastern Ltd. New Delhi.

References

- Anderson F (1976). Home appliance Servicing, Tarapore-Wals sons & Co., India.
- Kotschevir L and ME Terril (1971). Food Service Planning Layout and Equipment, John Wiley & Sons, US.
- MohiniSethi and SurjetMaihan (1987). Catering Management - An Integrated approach, Wiley Eastern Ltd., Noida.

Potter NN (2002). Food Science, CBS Publishers, New Delhi.

DFP 1409

Fundamentals of Food Science

Bloom's Taxonomy	K1	K2	K3	K4	K5	K6
CO1			3			
CO2			3			
CO3				4		
CO4			3			
CO5			3			

Mean = 3.2

This course deals with the techniques and principles involved in processing and preserving the food substances. The course is an important one and job orienting in nature that opens many career scopes after its completion.

Course Outcomes

Upon completion of this course, the student will be able to:

- i. Apply the principles and methods involved in the processing of different foods and discuss the processing of cereals and pulses.
- ii. Compare various millet processing techniques.
- iii. Discuss pulse processing and preservation techniques.
- iv. Identify oil seed processing and preservation.
- v. Explain spice processing and preservation techniques.

1. **Processing of foods:** Primary, secondary and tertiary processing, historical perspective, traditional technologies used in food processing. Effects of processing on components, properties and nutritional value of foods.
2. **Cereals and pulses:** Milling of wheat - extraction of flour, refined wheat flour and pasta products Milling of rice – parboiled rice, rice based instant food Processing of corn, barley and millets – pearling, flaking and puffing, corn starch products, Malting-Pulses – Red gram, Bengal gram, black gram, green gram, soy-based products, Decortication and dhal milling, elimination of toxic factors, fermentation and germination
3. **Milk and milk products:** Collection, Standardization, pasteurization, homogenization, UHT processing, manufacture of paneer, khoa, curd, yogurt, cream, butter, cheese, ghee, flavoured milk, ice creams, dehydrated milk products
4. **Fruits and vegetables:** Harvesting, physiological and bio chemical changes during ripening, handling and storage, general methods of processing – extraction and pulping, raw material and product specifications and standards.
5. **Meat, poultry, fish and egg:** Ageing and tenderizing, curing, smoking and freezing of meat, fresh storage of meat. Meat based products: sausages, salami, bacon. Fish: Dry fish - Tuna Fish Canning - Fish processing and storage, pickling. Egg: storage, frozen egg, dehydrated egg powder.

Text Books:

1. Desrosier N W and Desrosier J N (1987) The Technology of Food Preservation, 4th Edition, CBS, New Delhi.

2. Fellows P J (2000) Food Processing Technology: Principles and Practice 2nd edition CRC Woodhead Publishing Ltd., Cambridge.

References:

1. Khetarpaul Neelam (2005) Food Processing and Preservation, Daya Publications, New Delhi.
2. Salunke D K and Kadam S (1995) Hand book of Food Science and Technology - production, composition, storage and processing, Marcel Dekker INC, New York.
3. Sivasankar B (2002) Food Processing & Preservation, Prentice Hall, India.

DFP 1411

Food Processing and Preservation- I

Bloom's Taxonomy	K1	K2	K3	K4	K5	K6
CO1			3			
CO2					5	
CO3				4		
CO4			3			
CO5				4		

Mean = 3.8

DFP 1113**Lab in Fundamentals of Food Science (10h/wk) (10Cr)**

This course is structured to teach the fundamental and basic concepts of culinary techniques and cookery to include the Brigade system, cooking techniques, heat transfer, sanitation, safety, equipment usage and maintenance, menu knowledge and professionalism.

Course Outcomes

Upon completion of this course, the student will be able to:

- i. Apply various techniques involved in cereals and pulses Compare various millet processing techniques
- ii. Prepare various milk products
- iii. Formulate various nutritive products
- iv. Prepare sweets with refined sugar
- v. Evaluate different food products

Laboratory Experiments

1. Preparation of Malting, Extrusion and Germination.
2. Preparation of Pasta, Sandwich and Burger.
3. Preparation of Cake and Puff.
4. Preparation of Nutritious Balls and Chikki.
5. Preparation of Khoa, Paneer, Rasagulla and Sandesh.
6. Preparation of Custard, Mutton Cullet, Fish Finger and Chicken Pie.
7. Preparation of Caramel, Burfi, Jalebi and Halwa.
8. Sensory Evaluation.
9. Visit to Food Processing units

Text book

Chakraverty A (1988). Post-harvest Technology of Cereals, Pulses and oilseeds, Oxford and IBH, New Delhi.

References

Girdhari Lal, Siddappa GS and Tandon CL (1967). Preservation of Fruits and Vegetables, ICAR, New Delhi.

Norman W, Desrosier, Donald K and Tressler (1977). Fundamentals of food freezing, AVI publishing company, US.

Potter (1973). Food science, 2nd edition. AVI Publishing Company, US.

Bloom's Taxonomy	K1	K2	K3	K4	K5	K6
CO1			3			
CO2			3			
CO3			3			
CO4			3			
CO5			3			

Mean = 3

END 1402
[RWS]

Reading & Writing Skills

(3h/wk) (2Cr)

The Course aims at improving the learners' productive skills of English. It offers professional guidance on meaningful and aggressive reading experiences by familiarizing them with techniques and micro-skills of reading, comprehension abilities through literary and non-literary reading materials. It also strengthens their writing skills through the forms of writing that are useful to them academically and vocationally.

Course Outcomes

At the end of the course, students will be able to :

- i. practise the reading of simple prose texts silently and fast,
- ii. produce their comprehension abilities,
- iii. write letter of requests, permission and apology,
- iv. write paragraphs with topic sentence and supportive sentences, and
- v. write five-paragraph essays on simple, contemporary themes.

Unit 1 : Reading and comprehension skills

Unit 2 : Reading at various speeds, skimming & scanning, inferring
& interpreting, predicting, reorganizing material, comprehension
skills

Unit 3 : Writing leave letters and apology letters

Unit 4 : Paragraph writing, five-paragraph essay writing,

Unit 5 : Types of essay and paragraph writing: descriptive, argumentation,
narrative, and expository

Text book

Sekar, John, J. 2014. Reading and Writing Skills. Madurai. Department of English, the American College.

	K 1	K 2	K 3	K 4	K 5	K 6
CO 1			3			
CO 2			3			
CO 3						6
CO 4						6
CO 5						6

Mean: 4.8

Course Outcomes

At the end of the course, students will be able to:

- i. Edit and format text data and tables to make a Document.
- ii. Design worksheet and manipulate data and represent through graphs
- iii. Design a Slide show presentation and show in Multimedia form.

Unit I: Microsoft Word -Working with text - Formatting paragraph -Numbered and Bulleted lists -Working with Tables

Unit II: Mail Merging and Graphics -Spelling and Grammar Checking - Page format – Working with graphics

Unit III: Microsoft Excel -Modifying a Worksheet -Formatting cells -Formula cells

Unit IV: Functions and Charts -Formulae and Functions - Sorting and Filtering – Graphics – Charts.

Unit V: Power-Point -Working with slides -Color Schemes – Graphics – Slide Effects – Master Slides – Presentations-Slide Shows–Animations.

Text book

MS-Office 2003 Manual by Microsoft

Reference

Curtin D.P, Kim Foley K, Kunalsen, Morin. C, “Information Technology- The Breaking Wave”, TataMcGraw Hill 2002.

PERFORMANCE AND LIFE COPING SKILLS

LSA 1204

2 hrs/Wk – 2 Credits

Objectives: *To prepare the students better individuals in the society through life coping skills. To make them understand the need for learning life skills which will guide them to face the challenges. Training them to learn stress management and time management skills in order to achieve their life goals.*

Unit - I GOAL SETTING

Definition – Importance of Goals – SMART Goal & Time management – Types of Goals - Obstacles – Successful and Meaningful life

Unit - II MOTIVATION SKILL

Introduction to Motivation & Inspiration – Internal and External motivation – Methods of Motivation – Effects of de motivation

Unit - III PROBLEM SOLVING SKILL

Definition of problem – Reasons for problems – Stages of solving problems: Evaluation, Managing, Decision making, Resolving, Results

Unit - IV STRESS MANAGEMENT

Definition of Stress: Positive (Eustress), Negative (Destress) – Stressors: Internal, External – Causes of Stress – Types of Stress – Ways to manage stress

Unit - V TIME MANAGEMENT

Need for time management – Poor Time management – Saboteur Time styles – Techniques for managing time

Books for Reference:

1. Alphonse, X. 2011, “We shall overcome” A Text book on Life coping skills”, ICRDCE Publication, Chennai

Course Outcome: At the end of this course the student will be able,

CO1: To plan and set goals for their life

CO2: To assess the need for motivation for successful completion of tasks

CO3: To reflect the problem solving skill in day today life

CO4: To predict stressful situations and causes of stress in order to overcome them

CO5: To identify need for dealing with emotions for positive mental health

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5
Bloom's Taxonomy	CO1	CO2	CO3	CO4	CO5
K1: Remembering				4	
K2: Understanding					5
K3: Applying			3		
K4: Analyzing					
K5: Evaluating		2			
K6: Creating	1				

This course deals with the techniques and principles involved in processing and preservation of food substances. The course is an important one and job orienting in nature that opens many career scopes after its completion. It includes processing and preservation of fruits & vegetables, milk & milk products, meat, poultry & egg, sea foods, perishable foods.

Course Outcomes

Upon completion of this course, the student will be able to:

- i. Explain different processing and preservation of fruits and vegetables and prepare various milk products.
- ii. Discuss various processing and preservation techniques.
- iii. Identify novel technologies in the processing of fleshy foods.
- iv. Identify high end techniques in sea food processing and preservation.
- v. Compare various food processing technology.

1. Importance of food processing: Methods of processing cereals - wheat, rice, maize, pulses. Processing of fruits and vegetables - meat - fish - poultry - egg. Processing of oil seeds. processing of milk and milk products. Processing of condiments and spices - Beverages, tea, coffee and cocoa.

2. Food preservation by low temperature: freezing and refrigeration: Introduction to refrigeration - cool storage - freezing – definition - principle of freezing - freezing curve - changes occurring during freezing - types of freezing - slow freezing, quick freezing, introduction to thawing, changes during thawing and its effect on food.

3. Food preservation by high temperature: Thermal Processing- Commercial heat preservation methods – Sterilization, commercial sterilization, Pasteurization, and Canning – bottling.

4. Food preservation by moisture control drying and dehydration: Definition of drying - preservation, sun drying - dehydration (i.e. mechanical drying), heat and mass transfer, factors affecting rate of drying - normal drying curve - names of types of driers used in the food industry. Evaporation – Definition, factors affecting evaporation, names of evaporators used in food industry.

5. Food preservation by irradiation: Introduction - units of radiation - kinds of ionizing radiations used in food irradiation- mechanism of action - uses of radiation processing in food industry.

Text Books:

1. Potter NN (2013) Food science.
2. Brennan JG and Grandison AS (2012) Food processing handbook. 2nd Edition, John Wiley.

References:

1. ManoranjanKalia(2014)Food Quality Management Second Edition, Agrotech Publishing Academy, Udaipur.
2. Walter A. Mercer, (1988) Advances in Food Research First Edition, Academic Press,University of California, U.S.A.
3. Potter N (1995) Food Technology, 5th Edition, Cornell University, Ithaca, New York.

DFP 1410

Food Processing and Preservation- II

Bloom's Taxonomy	K1	K2	K3	K4	K5	K6
CO1			3			
CO2				4		
CO3			3			
CO4			3			
CO5			3			

Mean = 3.2

The main objective of this course is to impart knowledge and skills related to designing packaging system in food products and developing skills in handling of packaging equipment in the students

Course Outcomes

Upon completion of this course, the student will be able to:

- i. To outline the various properties of food packaging materials.
- ii. To identify suitable packaging material for different food substances.
- iii. To discuss the packaging systems and methods.
- iv. To compile knowledge in packaging aspects of fresh and processed foods.
- v. To rate the food quality changes in packaged foods.

- 1. Introduction to food packaging:** Packaging – definition, Functions of Packaging, requirements, characteristic of packaging materials, packaging materials for different foods in the market.
- 2. Types of Packaging materials** -Glass, Paper, metal, containers and plastic-types.
- 3. Packaging methods** - Aseptic packaging, retortable pouches, MAP, CAP, Shrink, vacuum, Nitrogen flush packaging and Edible packaging materials.
- 4. Packaging specification** - Shelf life of packed foods, convenience and hazards of packaging materials, moisture sorption properties of foods and selection of packaging materials, Interaction between packaging and foods.
- 5. Packaging of finished goods** -weighing, filling, scaling, wrapping, cartooning, labelling, marking and trapping. Labelling: standards, purpose, description types of labels, labelling regulation barcode, nutrition labelling, health claims, mandatorylabelling provision.

Text Book

Robertson GL (2013). Food Packaging: Principles and Practice, Third edition, CRC Press, US.

References

- Crosby NT (1981). Food packaging materials - Aspects of analysis and migration of contaminants, Applied Science Publisher Ltd., UK.
- Frank A, Pain H and Heather Y (1983). Hand book of Food packaging, Leonard hill publications, US.
- Mahadeviah M and Gowramma, RV (1996). Packaging Technology, Tata McGraw – Hill Publishing Company, New Delhi.
- Raja Ahvenainen (2003). Novel Food Packaging Techniques, Wood Head Publishing Company Ltd., New Delhi.

DFP 1412

Food Packaging

Bloom's Taxonomy	K1	K2	K3	K4	K5	K6
CO1		2				
CO2			3			
CO3		2				
CO4			3			
CO5					5	

Mean = 3

DFP1114**Lab in Food Processing and Preservation (10h/wk) (10Cr)**

The objective of this laboratory course is to provide hands on training of processing and preservation of various foods and food products. It includes processing and preservation of foods by sugar, by salt & acid by fermentation.

Course Outcomes

Upon completion of this course, the student will be able to:

- i. To develop the skill to analyze the quality like sugar such as jam, jelly etc.
- ii. To explain the fermentation process such as wine, beer.
- iii. To analyze technologies in food preservation.
- iv. To discuss preservation of foods by salt and acid.
- v. To evaluate the novel technologies in food preservation.

Laboratory Experiments

1. Preservation of foods by sugar
 - Preparation of Jam, Jelly.
 - Preparation of Marmalade, Cordial.
 - Preparation of Squash, Fruit bars.
 - Preparation of Preserves-Tuity Fruity (Papaya), Ginger Murabha, Amla Preserves.
2. Preservation of foods by salt and acid
 - Preparation of Vathal, Vadagam, Tomato ketchup and sauce.
 - Preparation of Chutneys.
 - Preparation of Pickles-Lemon, Mango, Garlic, Mixed vegetable.
3. Preservation by fermentation – Wine.
4. Visit to Food Processing Units – Cereal based, Pulse Based, Oil based and Spice Based.

Text Book

Srilakshmi B (2002). Food science, New Age Publishers, New Delhi.

References

- Fellows PJ (2009). Food Processing Technology: Principles and Practice, 3rd edition. Woodhead publishing, India.
- Heldman DR, and Hartel RW. (1999). Principles of Food Processing, 2nd edition, Aspen Publication, US.
- Singh PR and Heldman DR (2009). Introduction to Food Engineering, 4th edition, Academic Press, US.

Bloom's Taxonomy	K1	K2	K3	K4	K5	K6
CO1			3			
CO2			3			
CO3				4		

CO4					5	
CO5		2				

Mean = 3.4

ENA 2401

Study Skills (3h/wk) (2Cr)
(S S)

The third sequential General English Course aims at empowering second year undergraduate students with study skills necessary to continue their chosen major disciplines. The course assumes importance in the context of students lacking study skills and strategies for academic success.

Course Outcomes

Upon completion of this course, the student will be able to:

- i. practise healthy study habits and homework habits,
- ii. organise their academic skills,
- iii. apply time management skills,
- iv. explain psychological traits, and
- v. use ICT skills

Unit 1: General, Definition & scope of study skills, their needs, learning styles, study habits,
homework habits and strategies to improve study skills

Unit 2: Academic Skills, Effective, active listening, effective reading strategies & essay writing, note taking & making, summarizing, paraphrasing, information transfer, library skills, and dictionary skills.

Unit 3: Time Management, Motivation & success, choosing study partners, creation of study space, barrier to time management, strategies to overcome barriers, punctuality & time management, time management during exam

Unit 4: Psychological Traits, Concentration skills, memory, remembering, stress management, coping with test anxiety, critical thinking

Unit 5: ICT -ICT skills, computer literacy skills at basic, intermediate and advanced levels.

Textbook

Sekar, J.J. (2015). Study Skills. Madurai: Department of English, The American College

	K 1	K 2	K 3	K 4	K 5	K 6
CO 1			3			
CO 2				4		
CO 3			3			
CO 4				4		
CO 5						6

Mean: 4

Course Outcomes

Upon completion of this course, the student will be able to:

- i. Understand the role of Operating system as an interface between user and computer.
- ii. Understand the basic functionality of Operating system.
- iii. Understand the operation of Mobile OS.

Unit I: Introduction to operating system BIOS – DOS – Windows - types of operating system – operating system services - desktop operating system

Unit II: Network operating System - Server operating system – mainframe operating system – embedded operating system.

Unit III: Windows - Features of Windows Operating system – Multiprogramming

Unit IV: Process / Memory Scheduling - Multitasking – Buffering – Spooling – Time sharing – Browser support.

Unit V: Introduction to Android Application of Android – Features of Android – Messaging -Voice based features- Multitasking-Screen Capture-Video Calling-Multiple Language support.

Text books

1. Alphonse X, 2011 ICRDCE publication, December
2. Silberchatz, Galvin and Gagne, 1999. Operating system concepts, John Wiley and sons.

References

1. Curtin D.P, Foley K, Kunalsen, Morin, C. (2002). Information Technology- The Breaking Wave, TataMcGraw Hill.
2. http://en.wikipedia.org/wiki/List_of_features_in_Android

COPING WITH PSYCHOLOGICAL AND PHYSICAL ISSUES

LSA 2203

2 hrs/Wk – 2 Credits

***Objectives:** To enlighten the students about psychological and physical issues everyone goes through in their life and how to manage them for successful living. To acquaint them about the consequences of fear, shyness, emotions and stress in order to overcome them for maintaining better relationship with others and in their personal and professional life.*

Unit - 1 Coping with Fear and Shyness

Understanding Fear - Types of Fear – Overcoming Fear – Shyness – Types – Managing Shyness

Unit - II Coping with Emotions & Stress

Types of Emotions – Managing Emotions – Stress – Types & Need for understanding stress – Ways to manage stress

Unit - III Communication & Failure

Communication – Types & Styles – Ways to improve communication – Failure – Managing Failures

Unit - IV Coping with Addictions

Drug addictions – Causes of addiction – Physical & Societal implications – Internet Addiction – Cyber crime - Types and causes – Managing addictions

Unit - V Coping with Sexuality

Sex and Gender – Understanding Gender discrimination – Coping with gender discrimination – Understanding Sexuality – Consequences of Premarital & Extra martial sexual issues – Managing sexuality

References:

1. “We shall overcome - A Text book on Life coping skills”, Indian Centre for Research and Development of Community Education (ICRDCE) Publication, Alphonse, X. 2011, Chennai
2. “Living with Honour”, Macmillan Publishers India Ltd., Shiv Khera 2003
3. “Smart Guide to Relieving Stress”, Wiley, Carole Bodger, 1999
4. “Managing Stress”, National Press Publications, Kristine C. Brewer 1995

Course outcome: At the end of this course the student will be able,

CO1: To understand the types of fear and shyness and the ways of overcoming them

CO2: To manage emotions and stress for better living

CO3: To assess the types and apply the styles of communications in their daily walk of life

CO4: To identify the ways of coping with social media and substance addictions

CO5: To evaluate the distinction between Gender and Sexuality and their significance

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5
Bloom's Taxonomy	CO1	CO2	CO3	CO4	CO5
K1: Remembering				4	
K2: Understanding	1				
K3: Applying		2			
K4: Analyzing			3		
K5: Evaluating					5
K6: Creating					

This course is structured to teach the fundamental and basic concepts of dairy processing and preparation of milk and milk products.

Course Outcomes

Upon completion of this course, the student will be able to:

- i. Discuss the components in dairy processing
 - ii. Prepare various milk products.
 - iii. Assess the different methods in milk processing.
 - iv. Demonstrate the preparation of different milk products.
 - v. Identify the different techniques of packaging and storage.
-
1. **Introduction:**Chemical composition of milk, unit operations in dairy industry - Filtration, Clarification, Pasteurization, Homogenization and Sterilization
 2. **Processing of Milk:**Types of processed milk: pasteurized, toned, flavored, fermented, powdered and infant formula milk.
 3. **Milk Products:**Preparation methods and principles of paneer, cheddar cheese, curd, yoghurt, ice cream, dehydrated milk products.
 4. **Packaging, Storage and Quality Evaluation:**Packaging and storage of milk and milk products, Quality evaluation. Food laws and standards of dairy products
 5. **Cleaning & Sanitation of Dairy equipment:**Detergents, Ultrasonic techniques in Cleaning, Sanitizers, Mechanism of Fouling.

Text book

SukumarDe(1991).Outlines of Dairy Technology, Oxford Univ., Press, ND.

References

Herrington BL (1948).Milk & Milk Processing, McGraw-Hill Book Company.
Lampert LH(1970). Modern Dairy Products, Chemical Publishing Company.
Robinson RK (1996).Modern Dairy Technology, Vol 1 & 2, Elsevier AppliedScience Pub.
Walstra P(2005).Dairy Technology, Oxford Univ. Press, India.
Warner JN(1976), Principles of Dairy Processing, Wiley Science Publishers, USA.

Bloom's Taxonomy	K1	K2	K3	K4	K5	K6
CO1		2				
CO2					5	
CO3			3			
CO4					5	
CO5					5	

Mean = 4

The main objective of this course is to impart knowledge and skills related to analysis of different food products.

Course Outcomes

Upon completion of this course, the student will be able to:

- i. Formulate strategies in sensory analysis.
 - ii. Assess quality attributes of food.
 - iii. Compare different additives on food and its uses.
 - iv. Apply instrumentation techniques in food analysis.
 - v. Compile the laws related with food.
- 1. Sensory science:** Introduction, panel section, methods in sensory analysis, recent development in sensory science.
 - 2. Quality attributes of foods:** Food size and shape, colour and gloss, texture – visual and objectively measurable attributes
 - 3. Aroma of foods:** Introductory ideas, formation and chemistry ideas on taste formation and chemistry - Food additives
 - 4. Instrumental techniques:** Principles, working mechanism of GC-MS, HPLC, NMR, PCR.
 - 5. Food laws:** National and International Food Laws and Regulations - FSSAI - BIS, FPO, PFA and FDA.

Text book

Pearson D (2002). The Chemical Analysis of Foods, Churchill Livingstone, New York.

Reference Books

- Mahindru SN (2000). Food additives. Characteristics, detection and estimation. Tata McGraw-Hill Publishing Company Limited, New Delhi.
- Nielsen SS (2004). Introduction to the chemical analysis of foods, Jones and Bartlett Publishers, Boston, London.
- Sharma BK (2004). Instrumental Methods of Chemical Analysis, Goel Publishing House, New Delhi.

Bloom's Taxonomy	K1	K2	K3	K4	K5	K6
CO1			3			
CO2			3			
CO3			3			
CO4			3			
CO5			3			

Mean = 3

The objective of this laboratory course is to provide hands on training on analysis of milk and preparation of milk products.

Course Outcomes

Upon completion of this course, the student will be able to:

- i. Evaluate the components in milk
- ii. Analyse microbial status of milk
- iii. Formulate methods in the preparation of milk products
- iv. Compare the quality of milk
- v. Assess the physical properties of milk

Laboratory Experiments

1. Estimation of acidity in milk by Alizarin – Alcohol test.
2. Determination of specific gravity, SNF % and TS% in milk.
3. Estimation the milk fat by Gerber method.
4. Determination of Casein content in milk.
5. Evaluation of sterility of milk by Turbidity test.
6. Qualitative microbiological analysis of milk by MBRT.
7. Estimation of the purity of ghee by Baudouin test.
8. Preparation of curds, cream and butter milk
9. Preparation of Ghee
10. Preparation of ice cream
11. Preparation of a chart of physico - chemical properties and microbiological standards of milk and milk products.

Reference Book Sukumar De (1991). Outlines of Dairy Technology, Oxford University Press, New Delhi.

Bloom's Taxonomy	K1	K2	K3	K4	K5	K6
CO1					5	
CO2				4		
CO3					5	
CO4					5	
CO5			3			

Mean = 4

**ENA 2402
(CaSkills)**

Career Skills

(3h/wk)(2Cr)

The fourth sequential General English Course aims at empowering second year undergraduate students with communication & cognitive skills and personality traits necessary to empower their career skills. The course assumes importance in the context of students lacking career skills and strategies for successful profession.

Course Outcomes

Upon completion of this course, the student will be able to:

- i. speak and write in English,
- ii. practise interview skills,
- iii. explain cognitive skills,
- iv. produce thinking skills, and
- v. understand personal traits

Unit 1: Communication Skills - Active Listening & speaking, written & oral communication

Unit 2 : Interview Skills - Interview questions, job application, CV preparation, self-introduction, presentation skills, negotiation skills, conducting a meeting, agenda setting and recording minutes

Unit 3 : Cognitive Skills - Self- motivation, setting personal goals, problem solving, decision making and delegation skills

Unit 4 : Thinking Skills - Strategic thinking, organization, innovation, leadership skills

Unit 5 : Personal Traits Skills - Personal development & empowerment, confidence & rapport building, tact & diplomacy, emotional intelligence, self-esteem, humour and persuasion skills

Textbook

Sekar, J.J. (2015). Career Skills. Madurai: Department of English, The American College.

	K 1	K 2	K 3	K 4	K 5	K 6
CO 1						6
CO 2			3			
CO 3		2				
CO 4						6
CO 5		2				

Mean: 3.8

Course Outcomes

Upon completion of this course, the student will be able to:

- i. Understand the computer programming in problem solving.
- ii. Understand basic programming techniques.
- iii. Write simple programs using numeric and non-numeric data.

Unit I: Overview of C Middle level language – compilers versus interpreter – the form of a C program – compiling a C program

Unit II: Primitive Data types Operators: Data types – type conversions – operators – formatted input/output functions.

Unit III: Control statements If, if-else, switch, for, while, do..while, break and continue.

Unit IV: Aggregate Data Types Arrays – strings – functions – call by values – call by reference – passing arrays as arguments – local, global static and external variables.

Unit V: Structure and Union User defined data types – Structures - Union

Text book

Balagurusamy.E (2007). Programming in ANSI 'C', 4th edition, Tata McGrawHill.

COPING WITH SOCIAL AND ENVIRONMENTAL ISSUES

LSA 2204

2 hrs/Wk – 2 Credits

Objectives: *To make the students comprehend the social and environmental issues they face in the society. To teach them the necessity for understanding the issues and how to manage them for a better society. To kindle their mind about their responsibility to become a useful citizen to protect the society and the environment where they live.*

Unit -I Coping with Society

Family and Issues related to Marriage – Building relationships – Conflict management – Cultural alienation

Unit - II Coping with Human Resources

Time management – Money management – Skill management: Problem Solving Skills - Social skills - Health management

Unit - III Environmental Issues

Environment Vs Ecology – Pollution: Air, Water, Soil, Sound – Deforestation – Exploitation of natural resources – Environmental protection

Unit - IV Coping with Globalization

Globalization – Trends in Education, Employment, Consumerism – Merits and Demerits of Globalization

Unit - V Coping with Technology

Types of Technology – Technology in day today life - Social Media – Impacts of technology in modern society – Managing life with technology

Reference:

1. Alphonse, X. 2011, “We shall overcome” A Text book on Life coping skills”, ICRDCE Publication, Chennai

Course Outcome: At the end of this course the student will be able,

CO1: To relate the significance of relationships and need for coping with them

CO2: To demonstrate the skills of managing their time, money and health

CO3: To apply their knowledge in protecting their environment and preserve the resources

CO4: To assess the impact of globalization in our society and adjust their living conditions

CO5: To identify healthy ways to cope up with emerging technologies which affect the life

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5
Bloom's Taxonomy	CO1	CO2	CO3	CO4	CO5
K1: Remembering					5
K2: Understanding	1				
K3: Applying		2			
K4: Analyzing			3		
K5: Evaluating				4	
K6: Creating					

AFP 2408 Processing and Preservation of Meat and Marine Products (4h/wk) (4Cr)

This course is structured to teach the methods in processing and preservation of meat and marine products.

Course Outcomes

Upon completion of this course, the student will be able to:

- Explain the processing of meat and its by-products
- Compare various fish processing and storage methods to extend the shelf life
- Discuss and understand the preservation strategies of meat
- Apply the techniques of egg preservation in various atmospheric conditions
- Assess different techniques of packaging and storage of meat, poultry and fish

- Egg Processing:** Structure and composition of egg, processing of eggs, storage and transportation of egg products. Status of egg industries in Tamilnadu.
- Poultry processing:** Preservation of meat and poultry – freezing, smoking, drying, canning, HTST, fat imbedding, ironizing irradiation.
- Fish Processing:** Types of fish-shell fish-post fishing change- post – mortem changes in fish, handling, storage and transportation of fish. Low temperature, chilling and freezing, Thermal processing, dehydration, curing and smoking, preservation using antibiotics, preservation by irradiation.
- Meat Processing:** Nutritional quality of meat and poultry, structure of muscles-factor affecting quality of fresh meat. Postmortem changes – *Rigor mortis*. Meat products – Ham and Bacon, sausage, quality standards for meat products.
- Storage and Quality:** Packaging of meat, poultry and fish products, quality factors during storage, additives used in meat and fish products, contaminants and naturally occurring poisons, byproducts and wastes of meat, fish, poultry.

Text book

Richardson and Mead (1999). Poultry meat science, First edition, CABI Publishing;

References

Pearson AM and Young RB (1989). Muscle and Meat biochemistry, Academic press Inc
Romans JR, Costillo WJ, Carlson WC, Greaser ML and Jones KW(2004). The Meat We Eat, Interstate Publishers, USA.
Stadelman WJ and Cotterill OJ(2002). Egg Science and Technology, CBS Publishers, New Delhi.

Bloom's Taxonomy	K1	K2	K3	K4	K5	K6
CO1		2				
CO2				4		
CO3					5	
CO4				4		
CO5					5	

Mean = 4

This course enables students to gain knowledge on food safety and food laws and study about quality control and common food standards.

Course Outcomes

Upon completion of this course, the student will be able to:

- i. Outline food safety regulations
- ii. Discuss the food sanitations & safety functions
- iii. Compare various food adulterants & safety issues
- iv. Explain the quality control practices
- v. Identify hygienic & sanitary practices

1. **Food safety and Sanitation:** Meaning of food safety, definition and regulation of food sanitation, sources of contaminations, personal hygiene- food handlers, cleaning compounds, sanitation methods, waste disposal strategy (solid and liquid waste).
2. **Food Safety and Quality Assurance:** quality control of raw materials in process food control, quality control of finished products.
3. **Food adulteration:** common adulterants, simple tests for detection of adulteration. Types of adulteration and recent trends in food adulteration.
4. **Personal hygiene & Sanitary Practices:** Personal Hygiene - Health Requirements - Location and Surroundings of Food Industry - Slaughter House - Good Manufacturing Practices - Good Food Hygiene Practices - Storage.
5. **History of food regulations in Indian Legislations:** Prevention of Food Adulteration act (1954), Food product order (1955), Solvent Extracted Oil, De-oiled Meal and Edible flour (Control) Order (1967), Meat Food Products Order (1973) Edible Oils. To explain the concept of Packaging (1998) Edible Oils Packaging (1998), Vegetable Oil Products Order (1998), Milk & Milk Product Amendment Regulations (2009).

Text book

Food safety and standards regulations(2010). The Ministry of Health and Family Welfare, The Gazette of India: Extraordinary, Part- III, section.

References

General requirements (Food Hygiene) of the Codex Alimentarius, Volume II. Food and Agriculture Organization of the United Nations.
Nijhawan R (2017). Food safety and standards, 17th Edition, ILBCO India.

AFP 2410

Food Safety

Bloom's Taxonomy	K1	K2	K3	K4	K5	K6
CO1			3			
CO2				3		
CO3					5	
CO4				3		
CO5					5	

Mean = 4.2

AFP 2114 Lab in Processing of Meat and Marine Products (10h/wk) (10Cr)

This course is structured to teach the methods in processing and preservation of meat and marine products.

Course Outcomes

Upon completion of this course, the student will be able to:

- i. Evaluate the techniques in processing of meat
- ii. Demonstrate methods involved in fish processing
- iii. Compare different processing methods of egg
- iv. Analyse the preservation strategies of meat
- v. Design techniques of packaging and storage

Laboratory Experiments

1. Processing of chicken and quality testing.
2. Determination of egg components.
3. Preparation of egg products, boiled, fried, omelet.
4. Determine quality of egg by brine floatation technique.
5. Determination of egg density.
6. Visit to different meat processing industries.
7. Awareness of common adulterants in food samples.
8. Test to detect adulterants.
9. Awareness of certified marks on food packages.
10. Visit to toxicology lab and public health laboratory.

Text Book

Srilakshmi B (2002). Food science, New Age Publishers, New Delhi.

Bloom's Taxonomy	K1	K2	K3	K4	K5	K6
CO1			3			
CO2					5	
CO3					5	
CO4					5	
CO5						6

Mean = 4.8

This course is designed to develop environmental awareness to the students. It deals with the natural resources, ecosystems and the impact of human activity on them. This course also imparts the biodiversity and its conservation. It also sensitizes the students on the environmental issues and abatement of pollution and gives suggestion for sustenance.

Course Outcomes

Upon completion of this course, the student will be able to:

- i. Discuss the terminology commonly used in environmental science and to identify renewable and non renewable resources and its proper usage and conservation
- ii. Explain the concept , structure, function of ecosystem and to analyze the interaction of organism at different ecosystem
- iii. Evaluate the adverse human impact on abiotic and biotic community and sustainable strategies to mitigate the impact
- iv. Create knowledge on biodiversity and its conservation and utilize advances in environmental science to resolve issues and anticipate implications.
- v. Assess the consequences of environmental disasters and its remedy

1. **Introduction to environmental studies:** Concept and Scope – importance of sustainability and sustainable development. The Atmosphere, the Hydrosphere, the Lithosphere and the Biosphere. Concept of Renewable and Non-renewable resources:
2. **Ecology and Ecosystems:** Concept of ecology and ecosystem, Structure and function of ecosystem; Energy flow in an ecosystem; food chains, food webs; Basic concept of population and community ecology; ecological succession. Characteristic features of the following- Forest ecosystem - Grassland ecosystem - Desert ecosystem - Aquatic ecosystems (ponds, lakes, rivers, oceans)
3. **Environmental Pollution:** Pollution -Definition - Causes, effects and control measures of - Air pollution - Water pollution -Soil pollution - Marine pollution - .Noise pollution - Thermal pollution - Nuclear hazards . Solid waste Management: Causes, effects and control measures. Role of an individual in prevention of pollution. Natural Disasters and their Management: floods, earthquake, cyclone and landslides.
4. **Biodiversity and its conservation:** Definition: genetic, species and ecosystem diversity. Biogeographical classification of India- values Biodiversity at global, National and local levels. India as a mega-diversity nation - Hot-spots of biodiversity. Endangered and endemic species of India. Threats to biodiversity: habitat loss, poaching of wildlife, manwildlife conflicts.. Conservation of biodiversity: In-situ and Ex-situ method of conservation.
5. **Social Issues and the Environment:** Water conservation- rain water harvesting, watershed management. Wasteland reclamation. Afforestation. Management and Wildlife conservation. Climate change - Greenhouse effect - global warming - acid rain, ozone layer depletion. Environmental Laws : Environment Protection Act, 1986 ; The Water Act, 1974, The Air Act, 1981 and The Wildlife (Protection)

Act, 1972 , Forest Conservation Act .Issues involved in enforcement of environmental legislation. Public awareness.

Bloom's Taxonomy	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5
	CO1	CO2	CO3	CO4	CO5
K1: Remembering	1			4	
K2: Understanding	1	2			
K3: Applying			3		
K4: Analyzing					
K5: Evaluating					5
K6: Creating				4	

To give an overview about the real concepts of entrepreneurship and to impart knowledge about the various sources for a small business and hence motivate the students to become a job providers.

Course Outcomes

Upon completion of this course, the student will be able to:

- i. Cite the meaning of entrepreneurship and identify the role of entrepreneurs.
- ii. Identify different types of entrepreneurs and the problems faced by them
- iii. Identify the various sources of small business and capable of starting a business by creating own business plan.
- iv. Identify the various institutes and their functions that support entrepreneurs
- v. Identify and utilize the various incentives available for small scale business.

1. **Entrepreneur:** Definition - Characteristics - Functions - Competencies - Entrepreneur vs Entrepreneurship - Role of Entrepreneur in Economic Development.
2. **Types of Entrepreneurs:** Innovative - Adaptive - Fabian - Drone; Entrepreneur vs Intrapreneur, Copreneur; Women entrepreneur - Types - Problems.
3. **Starting a small Business:** Steps; **Project Report:** Contents – Importance.
4. **Institutional Support to Entrepreneurs:** SIDCO - TCOs - DIC - THIC - SIDBI - Commercial Banks.
5. **Incentives for Small Scale Business:** Subsidy - Tax Concessions - Assistance - Export Assistance - Technical Assistance.

Text Book

E. Gordan & K. Natarajan, Entrepreneurship Development, Himalaya Publishing House, 2017.

References

1. Holt, Entrepreneurship: New Venture Creation, Prentice-Hall, 2018.
2. R. V Badi & A. V Badi, Entrepreneurship, Vrinda Publication (p) Ltd, New Delhi 2010
3. K. Ramachandran, Entrepreneurship Development, Tata McGraw Hill, New Delhi, 2017.
4. Dr. Radha, Entrepreneurial Development, Prasanna and Co, Chennai. 2019

Bloom's Taxonomy	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5
	CO1	CO2	CO3	CO4	CO5
K1: Remembering					
K2: Understanding	1				
K3: Applying					5
K4: Analyzing		2		4	
K5: Evaluating					
K6: Creating			3		

CSV 3401 Information Communication Technology (4hr/wk) (4Cr)

This course aims at enabling the student to know the role of ICT resources in modern applications and presenting its environment. This course also makes a student familiar with Web environment and its applications in providing utilization and communication of Information.

Course outcomes:

At the end of the course the student will be able to:

- i. Explain the progress of information and communication technology and their role in modern world.
- ii. Identify the difference between Operating Systems and application software.
- iii. Examine different kinds of software and their working.
- iv. Utilize computer and similar electronic devices suitably for data processing.
- v. Use Internet safely and explore different kinds of information available on the Internet.

Unit I: Accessing the web –Introduction to the browser and browsing Accessing the web II – Introduction to the web familiarity with IOT environment – Connections and Connectors – Inputting in Indian Language – Font and Keyboard

Unit II: Creating with ICT – Handling Text – Handling Data – Handling Media – Operating Systems and its Requirement – Bringing together Hardware and Software

Unit III: Internet to access Information – Exploring Web resources – ICT in class room

Unit IV: Hardware and Software – Assistive Technologies – Working with Data I – Exploring spread sheet- Working with Data II – Exploring with spread sheet.

Unit V: E-mail and Web based Forums –Transacting through the web – Exploring E-commerce applications – Execution and peer evaluations –Evaluation and portable submission.

References

1. Brilliant Ideas for using ICT in the inclusive class room, II Edition, Sally McKeown, Angela McGlashon
2. Introducing Computing: A guide for teachers Edited by Lawrence Williams.

Bloom's Taxonomy	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5
	CO1	CO2	CO3	CO4	CO5
K1: Remembering		2			
K2: Understanding	1				
K3: Applying				4	5
K4: Analyzing			3		
K5: Evaluating					
K6: Creating					

This course is designated to gain a deeper understanding in art of Bakery and Confectionery products.

Course Outcomes

Upon completion of this course, the student will be able to:

- i. Outline the various properties of raw materials in bakery and confectionery industries
- ii. Discuss methods involved in manufacture of bakery products
- iii. Compile technical knowledge in bakery
- iv. Explain the physical factors of dough
- v. Rate the characteristics of finished bakery and confectionery finished products

1. **Bakery and Confectionery industry:** raw materials - quality parameters - dough development, dough chemistry, raw materials for cake making – flour, egg, yeast, butter, margarine, oil, leavening agents
2. **Preparation of bakery products I:** Bakery products description – chooseberry, donut, puddings, waffle, caramel and custard.
3. **Preparation of bakery products II:** Bakery products description – cakes, eggless cake, pizza base bread, biscuits, and effect of variations in formulation.
4. **Physical Parameters:** Rheological testing- Farinograph, Mixograph, Extensograph, Amylograph / Rapid Visco Analyzer, Falling number, Hosney's dough stickiness tester.
5. **Confectionery products:** Characteristics and processing of raw material, Technology of manufacturing of toffee, chocolate, hard boiled candies, bars, chewing gums, bubble gums storage and characteristics of finished products.

Text Book

Singh UK (2011). Theory of Bakery and Confectionary An operational approach, Kanishka Publishers and Distributors, New Delhi.

References:

Bakers Hand Book on Practical Baking (2000). U.S. Wheat Associates, New Delhi.
 Dubey SC (2002). Basic Baking. Published by the society of Indian Bakers, New Delhi.
 Nicoletto I and Foote R (2000). Complete Confectionary Techniques, Hodder and Solution, London,

Bloom's Taxonomy	K1	K2	K3	K4	K5	K6
CO1			3			
CO2				4		
CO3		2				
CO4			3			
CO5			3			

Mean = 3

This course gives a comprehensive understanding of the basic principles of management in food service units. It helps students to know responsibilities in catering establishment, hospitals and paves way for becoming a conscientious caterer and food service administrator. The major aim is to develop skills in setting up food service units.

Course Outcomes

Upon completion of this course, the student will be able to:

- i. Outline the role of different food service institutions.
 - ii. Design layout for catering establishment.
 - iii. Formulate and standardize different recipes.
 - iv. Explain usage of equipment in food service institution.
 - v. Discuss the importance of management in food service outlet.
-
1. **Food Service industry:** Definition – types of catering – Hotel, Motel, Restaurant, Cafeteria and chain hotels. Welfare – Hospitals, School, Residential establishment and Industrial catering, bakery. Transport – Air, Rail, Sea and Space Miscellaneous – Contract and Outdoor.
 2. **Layout:** Floor planning and layout for catering establishment, Characteristics of typical food service facilities. Lay out of kitchens, types of kitchen, storage and service area. Lay out of bakery unit.
 3. **Equipment in Food Service:** Classification, factors affecting selection of equipment – electrical and nonelectrical equipment. food storage, preparation, service, care of major, traditional, modern equipment.
 4. **Equipment in bakery and confectionery industry:** Mixers, proofing chambers, dough dividers, moulder, sheeter, baking ovens, cooling chamber, sealing packaging machines, Rolling and cutting machines.
 5. **Menu planning and Food Management:** Menu planning - Definition, principles of menu planning, types of menus, standardization of recipe - standard recipe format – uses. Standard portion sizes -portioning equipment, portion control, use of left over foods. Food management - Definition, principles, functions, steps and techniques in effective management. Tools of management, organization chart, work study, work simplification and work improvement. Financial Management – Costing, budgeting, accounting – factors affecting – food cost, labour cost, operating cost, overhead cost.

Text Book

Sethi M and Malhan SM (2007). Catering Management – An Integrated Approach, Wiley Eastern Limited, Mumbai.

References

Khan MA (2003). Food Service Operations, AVI Publications Co., Connecticut.
Negi, J (2000). Professional Hotel Management. S. Chand and Company Limited, New Delhi.

Palacio JP, Harger V and Shugari,G. (2001). Introduction to Food Service.MacMillan Pub Co., New York.

Thangam Philip (2005). Modern Cookery, 3rd edition, Orient Longman.

Bloom's Taxonomy	K1	K2	K3	K4	K5	K6
CO1					5	
CO2				4		
CO3		2				
CO4			3			
CO5			3			

Mean = 3.4

Lab in Bakery, Confectionery and Food Service Management

The course is designed to develop the ability to assess, formulate & the characteristics of quality of baked & confectionary products.

Course Outcomes

Upon completion of this course, the student will be able to:

- i. Outline the role of different ingredients in baking.
- ii. Acquire skills in the preparation of Bakery & Confectionary products.
- iii. Design preparation methods to finishing techniques.
- iv. Demonstrate an understanding of human resource management, financial management, and quality control.
- v. Acquire skills in the preparation of food.

Laboratory Experiments

1. Microscopic examination of wheat flour and other flours
2. Preparation of Gluten from various cereal flours.
3. Quality test for wheat flour used in the baked products- Maltose Number, Water absorption, Sedimentation value, Alcohol Acidity.
4. Preparation of wheat bread, milk bread, millet bread, buns, rolls.
5. Preparation of cakes and icing.
6. Preparation of puffs.
7. Preparation of salt biscuits, sweet biscuits, masala biscuits, chilli biscuits, chocolate biscuits, tri color biscuits, chocolate cookies, coconut cookies, nut rings.
8. Preparation of fudge, fondant, candies, toffees chocolates jujeps.
9. Planning and preparation of menu for various occasions
 - a) Birth day
 - b) Deepavali
 - c) New year special
 - d) Wedding menu
 - e) Christmas
 - f) Holi
10. Calculation of food cost, labor cost, operating cost and overhead cost of a home-made dish.
11. Calculation of gross profit percentage of an establishment welfare/ commercial / transport for catering

References

Dubey SC (2002). Basic Baking. Published by the society of Indian Bakers, New Delhi.

Nicolello I and Foote R (2000). Complete Confectionary Techniques. Hodder and Solution, London.

Bloom's Taxonomy	K1	K2	K3	K4	K5	K6
CO1		2				
CO2					5	
CO3						6
CO4			3			
CO5					5	

Mean = 4.2

VEV 3402 YOUTH IN THE GLOBAL CONTEXT 4hrs /4 credits

Objective: *To make the students understand the meaning and implications of globalization. To acquaint them about new challenges world is facing due to globalization. The good side and the sad side of globalization – To enlighten them about the need to learn family values and practice them to cope up with the newly arising challenges.*

Unit - I UNDERSTANDING KEY CONCEPTS OF GLOBALISATION

Free market Economy and Global Market Network - Communication and transport - Technology and Global Production System - Global Capital and investments - Culture of over consumption - Human needs - Over exploitation of resources

Unit – II EDUCATION IN GLOBALISED CONTEXT

Differential access to Education at the Primary, Secondary and Tertiary level- Problem of Quality Addressing deficiencies – need for communication and other Social skills - need for equitable and quality universal education

Unit - III GLOBALISATION AND EMPLOYMENT

New aspirations and the demands placed on youth - Changing structure of Employment and working norms related to time and remuneration - New Forms of insecurities - Cultural alienation - Youth and Consumerism - Distinguishing successful and meaningful life

Unit - IV YOUTH AND FAMILY VALUES

Mobility of Youth - Fragmentation of family structure - Issues relating to Marriage and Marital harmony; Addressing the growing rate of divorce and separation - Family related values

Unit - V GLOBALISATION AND OTHER SOCIO POLITICAL ISSUES

Poverty and Marginalization under Globalization – Terrorism - Rise of religious fundamentalis and Cultural Chauvinism – Corruption – Democracy - civil society issues – Social Values: Honesty, Hard Work, Trustworthiness

Books for refer

Study Materials will be provided.

Course outcomes: At the end of this course, the students will be able,

CO1: To explain what is globalization and their important aspects

CO2: To assess the conditions of education in their society

CO3: To predict the new challenges arise in the society due to globalization

CO4: To analyze the emerging trends in employment and cope up with them

CO5: To apply the values in their lives amidst the changing scenario

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5
Bloom's Taxonomy	CO1	CO2	CO3	CO4	CO5
K1: Remembering			3		
K2: Understanding	1				
K3: Applying					5
K4: Analyzing				4	
K5: Evaluating		2			
K6: Creating					

LSV 3402

Soft Skills

(4h/wk) (4Cr)

The learner will gain the skills required for the corporate world that would enhance one's employability and to provide an exposure to the students regarding the soft skills required for the job market.

Course outcomes:

At the end of this course, the students will be able to:

- i. Cite the meaning and define soft skill and also to identify the different types of soft skills.
- ii. Identify different types of communication and overcome the barriers for effective communication.
- iii. Develop and exhibit a good body language and enhance their personality.
- iv. Exhibit a polite behaviour in society or among members of a particular profession or group and enrich their public speaking skill.
- v. Enhance their writing skill and face interviews without fear.

Unit I - Soft Skill: Definition - Importance of soft skills - Types of soft skills.

Unit II - Communication: Definition - Process - Types - Verbal, non-verbal - Uses - Barriers of effective communication.

Unit III - Inter Personal Relation Skills: Body Language and personality.

Unit IV- Etiquettes or Manners: Art of Public Speaking - Characteristics of a good speech - Planning to speak.

Unit V- Writing Skills: Importance - Types **Interview:** Types - Selection - Appraisal - Exit.

Text Book

Rajendra Pal & J. S. Korlahalli, Essentials of Business Communication, Sultan Chand & Sons, New Delhi, 2016.

References

N.S.Raghunathan & B.Santhanam, Business Communication, Margham Publications, Chennai, 3rd Edition 2018.

Reddy, Appannnaih & Raja Rao, Essentials of Business Communication, Himalaya Publishing House, Mumbai, 2017.

Rizvi, M. Ashraf - Effective Technical Communication, Tata McGraw Hill, 2011

Blundell J. A & Middle N. M. G.: Career – English for the Business and Commercial World, Oxford University Press, 2009

Bloom's Taxonomy	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5
	CO1	CO2	CO3	CO4	CO5
K 1: Remembering					
K 2: Understanding	1				
K 3: Applying		2	3		
K 4: Analysing				4	
K 5: Evaluating					5
K 6: Creating					

CSV 3402 Database management system (4h/wk) (4Cr)

This course is intended to familiarize the students with the concept and significance of database maintenance and management. Moreover, the course would orient the students about the various aspects involved need for systematic retention of database involved in their respective vocations.

Course outcomes

At the end of the course the student will be able to:

- i. Identify the database approach and the database applications
- ii. Apply relational expressions for queries.
- iii. Examine the database design by normalization.
- iv. Build a table and manipulate the data using SQL Commands.
- v. Summarize the transactions, its properties and the concurrency controls.

Unit I: Databases and database users: Introduction – Characteristics of the database approach – Advantages of using the DBMS approach – A brief history of Database Applications.

Unit II: Database System Concepts and Architecture – Data Models, Schemas and Instances.

Unit III: Database Languages and Interfaces: The Database System Environment – Centralized and Client / Server Architecture for DBMSs – Classification of Database Management System.

Unit IV: Relational Model Concepts: Relational model Constraints and Relational Database Schemas, Update Operation, Transaction and dealing with Constraints violations.

Unit V: Database Recovery Concepts - Caching(Buffering) of Disk blocks – Write-ahead Logging, Steal / No-Steal and Force / No-Force - Checkpoints in the System Log and Fuzzy Check pointing – Transaction rollback

References

1. “Database Management System” – Raghu Ramakrishnan and Johannes Gehrke – 3rd edition, McGraw-Hill, 2003.
2. “DBMS a Practical Approach”, E.R. Ragiv Chopra, S Chand Publications.

Bloom's Taxonomy	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5
	CO1	CO2	CO3	CO4	CO5
K 1: Remembering	1				
K 2: Understanding					5
K 3: Applying		2		4	
K 4: Analysing			3		
K 5: Evaluating					
K 6: Creating					

The main objective of this course is to impart knowledge and skills related to food adulteration

Course Outcomes

Upon completion of this course, the student will be able to:

- i. Discuss different food adulterations
 - ii. Analyze adulterants in food
 - iii. Discuss the role of additives as adulterants
 - iv. Explain the laws and regulations related to food adulteration
 - v. Identify various certification systems.
-
1. **Adulteration:** Definition – reasons – types - intentional, incidental – microorganisms metallic contamination and toxic effect – packaging hazards – new adulterants.
 2. **Detection of Adulterants**– Common Food Adulterants – food grains and products, oil and fats, spices and condiments, milk and milk products.
 3. **Food Additives:** Definition, need for food additives, Types - Natural additives - Sugar and salt, Chemical additives -class I, class II additives, Colours, anti-caking agents, flavours, sweeteners, emulsifiers, stabilizers, chelating agents, sequesterants, antioxidants, and antimicrobial.
 4. **Preservatives:** Definition, uses and importance, types-natural, artificial preservatives Sodium Benzoate, Sodium Nitrite, Sodium Sulfite, Sulfur dioxide, propyl paraben, BHA, BHT
 5. **Other additives:** (i) Organic acids, propionate, benzoates, sorbates, acetates (ii) Ethylene and propylene oxide (iii) Alcohol (iv) Wood smoke (v) Esters (vi) Mono Sodium Glutamate (MSG)

Text Book

Srilakshmi, B. (2002). Food science, New Age Publishers, New Delhi.

References

- Taylor SL, Scanlan RA and Deckker M, (1985). Food Toxicology-A perspective on the relative risks, INC. publishing, New York.
- Elsevier KL, (1987). Toxicological aspects of Food, Applied science publishers Ltd., London.
- Gossesl AT and Bricker JD, (1986). Principles of Clinical Toxicology, Raven press, New York.
- Goldblatt LA, (1989). Aflatoxin scientific background, control and implications, Academic press, New York.

Bloom's Taxonomy	K1	K2	K3	K4	K5	K6
CO1				4		
CO2			3			
CO3		2				
CO4			3			
CO5				4		

Mean = 3.2

This course deals with various attributes of food in order to prevent spoilage by applying the principles of quality management. It provides opportunities to students to develop knowledge on quality management as well as quality control in food service sectors.

Course Outcomes

Upon completion of this course, the student will be able to:

- i. Discuss the different quality attributes of food
- ii. Explain the importance of colour & texture in food
- iii. Discuss about the microbial aspects and methods of preventing food contamination.
- iv. Explain the application of quality assurance in food industry
- v. Use quality assurance technique operations in food & beverage industry

1. **Introduction to Food Quality Attributes I:** Sensory Evaluation-Appearance, flavour, textural factors and additional quality factors and quality control.
2. **Introduction to Food Quality Attributes II:** Gustation - importance of gustation - taste organs, taste perception, basic tastes- sweet, salt, sour, bitter and umami, taste measurement, Electronic Tongue, taste abnormalities. Introduction to Food Quality Attributes II: Olfaction- importance of odour and flavor, odour perception, theories of odour classification, chemical specificity of odour, odour measurement, olfactory abnormalities.
3. **Colour:** Colour - importance, attributes of colour, perception of colour colour measurement: Munsell colour system, CIE colour system, Hunter colour system, colour abnormalities.
4. **Texture:** Texture - importance, classification, Rheology of foods. Texture measurement – consistometer, viscometer, tenderometer, penetrometer, succulometer, gelometer.
5. **Total Quality Management:** Laboratory quality procedures and assessment of laboratory performance. International Standards, Codex Alimentaries, HACCP.

Text Book

Rao E. S. (2013). Food Quality Evaluation. Variety Books Publishers and Distributors, New Delhi.

References

David A, Shapton M, Naroh F and Shapton (1991). Principles and Practises for the Safe Processing of Foods, Butterworth- Heinemann Ltd, Oxford.

Manay S and Shadaksharaswamy (2008) Foods - Facts and Principles, 3rd Edition, New Age International Pvt. Ltd.

Bloom's Taxonomy	K1	K2	K3	K4	K5	K6
CO1		2				
CO2		2				
CO3				4		
CO4				4		
CO5			3			

Mean = 3

Lab in Adulteration, Food quality testing and evaluation

VFP 3116

(10h/wk) (10Cr)

This course consists of planning, production and serving of food and beverages to customers and clients. Students also learn about hospitality in food service business. It provides an overview of the industry and current trends in food establishment management, food preparation theories, techniques and customer client relations.

Course Outcomes

Upon completion of this course, the student will be able to:

- i. Demonstrate technical knowledge in flour analysis.
- ii. Use the techniques in setting of food outlet.
- iii. Formulate plans relevant to food and service management.
- iv. Compile technical knowledge of hygiene and maintenance of equipment
- v. Discuss about the microbial aspects and methods

Laboratory Experiments

1. Identification of adulterants in milk and milk products.
2. Identification of adulterants in oil and fats.
3. Identification of adulterants in food grains and its products.
4. Identification of adulterants in salt, spices and condiments.
5. FPO standard foods and food products and analyzing their quality.
6. Microbiological examination of food.
7. Assessment of surface sanitation by swab and rinse method.
8. Bacteriological analysis of water by MPN method.
9. Qualitative tests for hydrogenated fats.
10. Analytical and effective tests of sensory evaluation.
11. Measurement of colour by using tintometer.
12. Study on flavour defects in milk.

References

- Palacio, J.P, Harger, V, Shugari, G and Thesis, M (2001). Introduction to Food Service. MacMillan Pub Co., New York.
- Cessarani, V. and Kinton, R (2002). Practical Cookery. 7th Edition. Hodder and Stoughton publishers.
- Khan, M.A (2003). Food Service Operations. AVI Publications Co., Connecticut.
- Thangam Philip (2005). Modern Cookery. 3rd Edition. Orient Longman Limited.
- Sethi, M. and Malhan, S.M (2007). Catering Management – An Integrated Approach. Wiley Eastern Limited, Mumbai.

Bloom's Taxonomy	K1	K2	K3	K4	K5	K6
CO1					5	
CO2			3			
CO3					5	
CO4				4		
CO5		2				

Mean = 3.8