

# **CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)**

**NATIONALLY ACCREDITED (IICYCLE) WITH “A” GRADE BY NAAC**

**ISO 9001:2015 Certified**

**TIRUCHIRAPPALLI**

## **DEPARTMENT OF NUTRITION AND DIETETICS**



### **B.Sc., NUTRITION AND DIETETICS**

#### **SYLLABUS**

**2022-2023 and Onwards**

**CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)**  
**DEPARTMENT OF NUTRITION AND DIETETICS**

**VISION**

To strengthen and integrate academic excellence, ethical values and social responsibility to develop a healthy nation by imparting skill based knowledge, professional competency and entrepreneurial skills.

**MISSION**

- To have a breadth of knowledge across the subject areas of Nutrition and Dietetics.
- To professionally enrich the students for successful career in Academia, Industry and Research.
- To promote and inculcate self-reliance, social relevance, sound value system and code of professional practice among students.

## PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEOs	Statements
<b>PEO1</b>	<b>LEARNING ENVIRONMENT</b>  To facilitate value-based holistic and comprehensive learning by integrating innovative learning practices to match the highest quality standards and train the students to be effective leaders in their chosen fields.
<b>PEO2</b>	<b>ACADEMIC EXCELLENCE</b>  To provide a conducive environment to unleash their hidden talents and to nurture the spirit of critical thinking and encourage them to achieve their goal.
<b>PEO3</b>	<b>EMPLOYABILITY</b>  To equip students with the required skills in order to adapt to the changing global scenario and gain access to versatile career opportunities in multidisciplinary domains.
<b>PEO4</b>	<b>PROFESSIONAL ETHICS AND SOCIAL RESPONSIBILITY</b>  To develop a sense of social responsibility by formulating ethics and equity to transform students into committed professionals with a strong attitude towards the development of the nation.
<b>PEO5</b>	<b>GREEN SUSTAINABILITY</b>  To understand the impact of professional solutions in societal and environmental contexts and demonstrate the knowledge for an overall sustainable development.

**PROGRAMME OUTCOMES FOR B.Sc., Nutrition and Dietetics PROGRAMME**

<b>PO NO</b>	<b>Programme Outcome</b> <b>On completion of B.Sc., Programme, the students will be able to</b>
<b>PO1</b>	<b>ACADEMIC EXCELLENCE AND COMPETENCE</b> Elicit firm fundamental knowledge in theory as well as practical for coherent understanding of academic field to pursue multi and interdisciplinary science careers in future.
<b>PO2</b>	<b>HOLISTIC AND SOCIAL APPROACH</b> Create novel ideas related to the scientific research concepts through advanced technology and sensitivity towards sustainable environmental practices as well as social issues.
<b>PO3</b>	<b>PROFESSIONAL ETHICS AND TEAM WORK</b> Explore professional responsibility through project strategies, internships, field trip/industrial visits and mentorship programmes to transmit communication skills.
<b>PO4</b>	<b>CRITICAL AND SCIENTIFIC THINKING</b> Equip training skills in internships, research Projects to do higher studies in multidisciplinary path with higher level of specialization to become professionals of high quality standards.
<b>PO5</b>	<b>SOCIAL RESPONSIBILITY WITH ETHICAL VALUES</b> Ensure ethical, social and moral values in the minds of learners and attain gender parity for building a healthy nation.

**PROGRAMME SPECIFIC OUTCOMES FOR B.Sc., NUTRITION AND DIETETICS**  
**PROGRAMME`**

<b>PSO NO</b>	<b>Programme Specific Outcomes` Students of B.Sc., Nutrition &amp; Dietetics will be able to</b>	<b>POs Addressed</b>
<b>PSO1</b>	Apply the knowledge of food science, nutrition and dietetics to resolve the scientific issues and problems.	PO1
<b>PSO2</b>	Assess the nutritional status and recommend nutritional support and therapeutic care as sustainable approach for better health and prevention of diseases.	PO1, PO2
<b>PSO3</b>	Associate physiological, biochemical and microbiological parameters with health and diseases.	PO1
<b>PSO4</b>	Develop technical and human relation skills in relation to food services, demonstrate professional attributes required to manage the hospitality industry and to communicate effectively in the context of nutrition and dietetics.	PO3, PO4
<b>PSO5</b>	Demonstrate critical thinking skills and analytical abilities to identify and solve problems through internships and projects.	PO4, PO5



**CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY-18**

**B.Sc NUTRITION AND DIETETICS**

(For the candidate admitted from the Academic year 2022-2023 and onwards)

Se me ster		Course	Title	Course Code	Inst. Hrs. / week	Cred its	Exam			Total
							Hr s.	Marks		
								Int.	Ext.	
I	I	Language Course – I (LC) – Tamil * / Other Languages *	Ikkala Ilakkiyam	22ULT1	6	3	3	25	75	100
			Hindi Literature &Grammar-1	22ULH1						
			History of Popular Tales, Literature and Sanskrit Story	22ULS1						
			Basic French-I	22ULF1						
	II	English Language Course- I(ELC)	Functional English for Effective Communication – I	22UE1	6	3	3	25	75	100
	III	Core Course – I(CC)	Food Science	22UND1CC1	5	5	3	25	75	100
		Core Practical - I (CP)	Food Science- Practical	22UND1CC1P	3	3	3	40	60	100
		First Allied I	Food Microbiology	22UND1AC1	4	3	3	25	75	100
		First Allied II	Food Microbiology – Practical	22UND1AC1P	4	3	3	40	60	100
	IV	Ability Enhancement Compulsory Course – I (AECC)	UGC Jeevan Kaushal- Universal Human Values	22UGVE	2	2	-	100	-	100
		TOTAL			30	22				700

SEMESTER I	INTERNAL MARKS: 25		EXTERNAL MARKS:75	
COURSE CODE	COURSE TITLE	CATEGORY	Hrs/Week	CREDIT
22UND1CC1	FOOD SCIENCE	CORE	5	5

### Course Objective

- To obtain knowledge on different food groups and their composition.
- To study the different methods of cooking.
- To understand the role of food groups in cookery.

### Course Outcome and Cognitive Level Mapping

On the successful completion of the course, students will be able to

CO Number	CO Statement	Cognitive Level
CO 1	Define and classify the food groups and different cooking methods.	K1,K2,K3, K4
CO 2	Explain structure, composition and processing of food groups.	K1,K2,K3, K4
CO 3	Illustrate the chemical reactions that occur during cooking and changes that occur during storage of fruits and vegetables.	K1,K2,K3, K4
CO 4	Predict properties and role of food groups in cookery.	K1,K2,K3, K4
CO 5	Examine the quality of egg and factors affecting tenderness of meat.	K1,K2,K3, K4

### Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	2	3	3	2	2	3
CO2	3	3	2	2	2	3	2	2	2	3
CO3	3	3	2	2	2	3	2	2	2	3
CO4	3	3	2	2	2	3	2	2	2	3
CO5	3	3	2	2	2	3	2	2	2	3

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“-” indicates there is no correlation.

## **SYLLABUS**

### **UNIT I**

**(16 Hours)**

**a. INTRODUCTION TO FOOD SCIENCE AND NUTRITIONAL CLASSIFICATION OF FOODS**

Definition of Food Science, Basic Five Food Groups, Food Pyramid, Nutritional classification of foods – Energy yielding, body building, protective and regulatory foods.

**b. CLASSIFICATION OF NUTRIENT**

Macro Nutrients - Carbohydrate, Protein and Fat and Micro Nutrients – Vitamins, Minerals and its Sources.

**c. COOKING METHODS**

Objectives, different types cooking methods- moist, dry heat methods, microwave cooking, combination of cooking methods and, Recent methods of cooking – Ohmic cooking and induction cooking - merits and demerits.

### **UNIT II**

**(20 Hours)**

**a. CEREALS AND CEREAL PRODUCTS**

Structure, composition, nutritive value and milling of wheat and parboiling of rice. Nutritional importance of millets - (maize, jowar, ragi, bajra), malting of cereals and role of cereals in cookery.

**b. PULSES**

Composition, nutritive value, factors affecting cooking quality of pulses, germination, role of pulses in cookery.

**c. NUTS AND OILSEEDS**

Composition, Nutritive value.

### **UNIT III**

**(14 Hours)**

**a. FRUITS**

Classification, nutritive value, changes during ripening of fruits, enzymatic browning and methods of prevention, storage techniques.

**b. VEGETABLES**

Classification and nutritive value, pigments- fat-soluble, water-soluble, selection of vegetables, cooking of vegetables-changes during cooking, nutrient loss, effect of cooking on the pigments.

### **UNIT IV**

**(22 Hours)**

**a. MILK AND MILK PRODUCTS**

Composition, nutritive value, types of milk products- fermented milk products (Butter milk, Yogurt) and non - fermented milk products (Skim milk, Evaporated milk, Sweetened condensed milk, Milk powder, Khoa, Ice cream).

**b. EGG**

Structure, composition and nutritive value, evaluation of quality of egg.



**c. MEAT**

Structure, composition, types of meat, cuts of meat, ageing and curing of meat, post mortem changes in meat, and tenderness of meat, meat cookery.

**d. POULTRY**

Composition, classification and nutritive value, poultry cookery.

**e. FISH**

Structure, composition, nutritive value, selection of fish, fish cookery.

**UNIT V**

**(18 Hours)**

**a. FATS AND OILS**

Composition, types of oils, functions, rancidity, hydrogenation, winterization, smoking point and role of fat or oil in cookery.

**b. SUGAR**

Nutritive value, sugar related products, stages of sugar cookery, crystallization, factors affecting crystallization.

**c. SPICES AND CONDIMENTS**

Uses of spices in Indian cookery and medicinal properties.

**UNIT VI**

**SELF STUDY FOR ENRICHMENT (Not to be included for External Examination)**

Solar cooking method- merits and demerits. Role of Nuts and oilseeds in cookery. Criteria of selection of fruits. Role of milk in cookery. Types of spices in Indian cookery.

### **Text Books**

1. Potter, Norman, N., (2007), *Food Science*. 5<sup>th</sup> Edition. CBS Publications and distributors, New Delhi.
2. Shakuntala Manay, N., (2013). *Foods: Facts and Principles*. 3<sup>rd</sup> Edition. New Age International Publishers, New Delhi.
3. Swaminathan, M., (2019). *Advanced Text Book on Food and Nutrition*. Volume (2<sup>nd</sup> Edition). Bangalore Printing and Publishing Co. Ltd, Bangalore.
4. Mahatb, S., Bamji., Kamala Krishnasamy, Brahman, G.N.V., (2020) *Textbook of Human Nutrition*. 3<sup>rd</sup> Edition. Oxford and IBH Publishing Co. P. Ltd., New Delhi.

### **Reference Books**

1. Sharma Jyoti, S., (2009). *Applied Nutrition and Food Science*. Akansha Publishing House, New Delhi.
2. Raheena Begum, M., (2015). *Textbook of Foods, Nutrition and Dietetics*. 3<sup>rd</sup> Edition. Sterling Publishers Pvt. Ltd, New Delhi.
3. Krause, M. V., Hunesher, M. A., (2013). *Food, Nutrition and Diet Therapy*. W. B. Saunders Company, Philadelphia, London.
4. Vickie, A., Vaclavik Elizabeth, W., Christian, (2014), *Essentials of Food Science*. 4<sup>th</sup> Edition. Springer Science and Business Media, New York.
5. Avantina Sharma, (2019). *Textbook of Food Science and Technology*. 3<sup>rd</sup> Edition. CBS Publishers and Distributors.

### **Web References:**

1. <https://www.scienceofcooking.com/>
2. [https://www.brainkart.com/article/Structure-of-cereal-grains\\_33949/](https://www.brainkart.com/article/Structure-of-cereal-grains_33949/)
3. <https://fruitsandveggies.org/stories/key-nutrients-that-protect/>
4. <https://pubmed.ncbi.nlm.nih.gov>
5. <https://journalofethnicfoods.biomedcentral.com>

### **Journals:**

1. Food Science and Nutrition, John Wiley and Sons Ltd publisher, United Kingdom.
2. Food and Nutrition Research, Co-Action Publishing, Sweden.
3. Journal of Food Science Education, Institute of Food Technologists publishing, United States.
4. Journal of the Science of Food and Agriculture, Wiley-Blackwell publishing, England.

### **Pedagogy**

Chalk and talk, PPT, Discussion, Assignment, Demo, Quiz, Seminar.

### **Course Designers**

Ms. E. AGALYA

Ms. C. NIVETHA

SEMESTER I	INTERNAL MARKS - 40		EXTERNAL MARKS - 60	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDIT
22UND1CC1P	FOOD SCIENCE – PRACTICAL	CORE PRACTICAL	3	3

### Course Objectives

- To gain knowledge in food groups.
- To compare weighing and measuring of raw and cooked food items.
- To formulate recipes by applying different cooking techniques.

### Course Outcome and Cognitive Level Mapping

On the successful completion of the course, students will be able to

CO Number	CO Statement	Cognitive Level
CO 1	Identify various food groups and cooking techniques	K1,K2,K3, K4
CO 2	Interpret weighing and measuring and compare weight of raw and cooked food items	K1,K2,K3, K4
CO 3	Prepare recipes from five food groups	K1,K2,K3, K4
CO 4	Relate cooking methods with different food groups	K1,K2,K3, K4
CO 5	Determine role of food groups in cookery	K1,K2,K3, K4

### Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	2	3	3	2	2	3
CO2	3	3	2	2	2	3	2	2	2	3
CO3	3	3	2	2	2	3	2	2	2	3
CO4	3	3	2	2	2	3	2	2	2	3
CO5	3	3	2	2	2	3	2	2	2	3

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

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## **SYLLABUS**

1. Identification of ingredients from various food groups. (3 hours)
2. Weighing and measuring of raw and cooked food items. (3 hours)
3. **CEREAL BASED RECIPES:** Idli, Chapathi, Poori, Vermicelli upma, Kozhukattai, Aloo paratha, Rice. (3 hours)
4. **MILLET BASED RECIPES:** Ragi Vermicelli upma ,Sathumavu mix, Millet ball, Millet pongal, Millet payasam. (3 hours)
5. **PULSE BASED RECIPES:** Sundal, Bholi, Green gram payasam, Dhal makhani, Vadai, Sambar and Sprouts salad. (6 hours)
6. **FRUITS BASED RECIPES:** Fritters, Halwa, Salad, Milkshakes and Fresh juices.(6 hours)
7. **VEGETABLES BASED RECIPES:** Green leafy kootu, Avial, Stewed potato curry, Poriyal, Vegetable Salad, and Vegetable soup. (6 hours)
8. **MILK BASED RECIPES:** Paneer, Phirnee, Payasam, Ice cream and Basanthi. (6 hours)
9. **MEAT BASED RECIPES:** Deep fried Chicken, Mutton gravy. (3 hours)
10. **FISH BASED RECIPES:** Steamed fish, Fish fry, Fish gravy. (3 hours)
11. **EGG BASED RECIPES:** Boiled, Scrambled and Poached egg, Curry and Omelette. (3 hours)

### **Text Books**

1. Shakuntala Manay, N., (2013). *Foods: Facts and Principles*. 3<sup>rd</sup> Edition. New Age International Publishers. New Delhi.
2. Swaminathan, M., (2019). *Advanced Text Book on Food and Nutrition*. 2<sup>nd</sup> Edition. Bangalore Printing and Publishing Co. Ltd, Bangalore.

### **Reference Books**

1. Vickie, A., Vaclavik Elizabeth, W., Christian, (2014). *Essentials of Food Science*. (4<sup>th</sup> Edition. Springer Science and Business Media, New York.
2. Raheena Begum, M., (2015). *Textbook of Foods, Nutrition and Dietetics*. 3<sup>rd</sup> Edition. Sterling Publishers Pvt. Ltd, New Delhi.
3. Avantina Sharma, (2019). *Textbook of Food Science and Technology*. 3<sup>rd</sup> Edition. CBS Publishers and Distributors.

### **Pedagogy:**

E-content, Lecture, Power point presentation, Seminar, Assignment, Demonstration and Industrial visit

### **Web Links:**

1. <https://www.scienceofcooking.com/>
2. [https://www.nios.ac.in/media/documents/SecHmscicour/english/Home%20Science%20\(Eng\)%20Ch-4.pdf](https://www.nios.ac.in/media/documents/SecHmscicour/english/Home%20Science%20(Eng)%20Ch-4.pdf)
3. [https://www.youtube.com/watch?v=QO\\_V3h14Fyc&ab\\_channel=SciShow](https://www.youtube.com/watch?v=QO_V3h14Fyc&ab_channel=SciShow)
4. <https://everydaynourishingfoods.com/how-to-cook-fluffy-millets/>

### **Course Designers:**

- Ms. E. AGALYA
- Ms. C. NIVETHA

SEMESTER I	INTERNAL MARK : 25		EXTERNAL MARK : 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDIT
22UND1AC1	FOOD MICROBIOLOGY	ALLIED	4	3

### Course Objectives

- To acquire knowledge in relevance to microbiology and its applications in everyday life
- To learn various technique in food preservation.
- To understand the role of microorganisms in food industry and their beneficial effects.

### Course Outcome and Cognitive Level Mapping

On the successful completion of the course, students will be able to

Co Number	Co Statement	Cognitive Level
CO1	Describe fundamental principles pertaining to food microbiology	K1,K2,K3, K4
CO2	Relate the preservation methods for the prevention of spoilage	K1,K2,K3, K4
CO3	Examine microbial quality of food and water	K1,K2,K3, K4
CO4	Interpret role of microbes in fermented food products	K1,K2,K3, K4
CO5	Illustrate benefits and hazards of micro organism	K1,K2,K3, K4

### Mapping of Co with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	2	3	2	2	3	3	3	3	3
CO2	2	2	3	2	2	3	3	2	2	2
CO3	2	2	3	2	2	3	3	2	2	3
CO4	2	2	3	3	2	3	3	3	3	3
CO5	2	2	3	2	2	3	3	3	3	3

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“-” indicates there is no correlation.

## **SYLLABUS**

### **UNIT 1**

**(12 Hours)**

#### **a. INTRODUCTION TO MICROBIOLOGY**

Microscope – Types and uses, classification of microorganisms – Prokaryotes and Eukaryotes.

#### **b. MORPHOLOGY OF MICROORGANISMS**

Virus, Fungi, Protozoa and Algae.

### **UNIT II**

**(12 Hours)**

#### **a. GROWTH AND MULTIPLICATION**

Growth curve, batch culture and continuous culture, chemostat and turbidostat.

#### **b. FACTORS AFFECTING GROWTH**

Intrinsic factors -nutrient content, pH, redox potential, antimicrobial barrier and water activity  
Extrinsic factors - relative humidity, temperature and gaseous atmosphere.

### **UNIT III**

**(12 Hours)**

#### **a. MICROBIOLOGY OF WATER**

Bacteriological examinations, total count, test for E –Coli and Purification of water. Modern methods of purification – Reverse Osmosis, ultraviolet purification, activated carbon.

#### **b. CONTROL OF MICROORGANISMS**

Temperature – high, low, sterilization, irradiation.

Chemical agents – Disinfectant, benzoates, sorbates, propionates, acetates, nitrates, nitrites, sulphur dioxide, sulphites, pickling, addition of sugar or salt, drying.

### **UNIT IV**

**(12 Hours)**

#### **a. MICROBIOLOGY OF PERISHABLE FOODS**

Contamination, spoilage and preservation of vegetables and fruits, milk and milk products, meat and meat products, egg, poultry, baked products and canned products.

#### **b. MICROBIOLOGY OF NON - PERISHABLE FOODS**

Contamination, spoilage and preservation of cereal and cereal products, pulses and legumes, sugar and sugar products.

### **UNIT V**

**(12 Hours)**

#### **a. BENEFICIAL EFFECTS OF MICROORGANISMS**

Fermentation, Role of microorganisms in fermented foods - cheese, sauerkraut, and soy based foods, factors controlling fermentation in foods. Probiotics and Prebiotics,

#### **b. HAZARDS OF MICROORGANISMS**

Food poisoning, food borne diseases – Salmonellosis, Botulism, Hepatitis, Amoebic dysentery.

## UNIT VI

### SELF STUDY FOR ENRICHMENT (Not to be included for External Examination)

Morphology of Bacteria. Difference between chemostat and turbidostat. Role of salt and sugar in control of microorganism. List the microorganism responsible for spoilage in fruits and vegetables. Benefits of food preservation.

#### Text Books

1. Frazier William, C. (2014). *Food Microbiology*. 5<sup>th</sup> Edition. McGraw Hill Irwin Companies. New York
2. Adams. (2018) *Food Microbiology*. 2<sup>nd</sup> Edition. New Age International Publishers. New Delhi.
3. Pelczar Jr Michael, J. (2014) *Microbiology*. McGraw Hill Education (India) Private Ltd, New Delhi.

#### Reference Books

1. Sugandhar Babu R P. (2008) *Food Microbiology*. Adhyayan Publishers and distributors, New Delhi.,
2. Vijaya Ramesh K. (2007) *Food Microbiology*. 1<sup>st</sup> Edition. New Age International Publishers. New Delhi.
3. Bohra and Parihar. (2012) *Food Microbiology*. Student edition, Jodhpur.
4. Anathanarayan, (2013) *Textbook of Microbiology*. University Press (India) Pvt. Ltd, Hyderabad.

#### Web Links

1. <http://airccse.org/journal/ijscai/papers/3214ijscai01>.
2. <https://www.biologydiscussion.com/microorganisms/microbes-microorganisms/microbes-in-the-food-industry-microorganisms-biology/82587>
3. <https://www.rapidmicrobiology.com/test-method/theory-and-practice-of-microbiological-water-testing>
4. <https://academic.oup.com/femsle/article/362/20/fnv151/543071>

#### Journals :

1. Journal of Microbiology and Infectious Disease, Turkey .
2. Journal of Basic Microbiology, Wiley-Blackwell, Germany.
3. Journal of Microbiology, Microbiological Society Korea, South Korea.
4. Journal Applied Microbiology, Cardiff, U K.

#### Pedagogy:

E-content, Lecture, Power point presentation, Seminar, Assignment

#### Course Designers

- Ms. S. FATHIMA
- Ms. T.R. REVATHI



SEMESTER I	INTERNAL MARK : 40		EXTERNAL MARK : 60	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDIT
22UND1AC1P	FOOD MICROBIOLOGY - PRACTICAL	ALLIED PRACTICAL	4	3

#### Course Objective

- To acquire knowledge on cultivation of microorganisms.
- To isolate microorganisms from food products.
- To evaluate number of microorganism from food products.

#### Course Outcome and Cognitive Level Mapping

On the successful completion of the course, students will be able to

Co Number	Co Statement	Cognitive Level
CO1	Explain the instruments and their functions used for microbiological analysis	K1,K2,K3, K4
CO2	Illustrate the preparation methods of culture media	K1,K2,K3, K4
CO3	Summarize the culture media techniques	K1,K2,K3, K4
CO4	Distinguish potability of water	K1,K2,K3, K4
CO5	Evaluate microorganism responsible for spoilage in different in foods	K1,K2,K3, K4

#### Mapping of Co with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	2	3	2	2	3	3	2	3	3
CO2	2	2	3	2	2	3	3	2	3	3
CO3	2	2	3	2	2	3	3	2	3	3
CO4	2	2	3	2	2	3	3	2	3	3
CO5	2	2	3	2	2	3	3	2	3	3

“1” – Slight (Low) Correlation

“3” – Substantial (High) Correlation

“2” – Moderate (Medium) Correlation

“-” indicates there is no correlation.

## **SYLLABUS**

1. Instrumentation in microbiology laboratory and their function – Microscope, Shaker, Water bath **(6 Hours)**
2. Instrumentation in microbiology laboratory and their function – Autoclave, Hot air oven, Laminar air flow **(6 Hours)**
3. Instrumentation in microbiology laboratory and their function - Centrifuge, Calorimeter, Spectrophotometer **(6 Hours)**
4. Preparation of culture media. **(6 Hours)**
5. Prepare pure culture techniques using spread plate method **(6 Hours)**
6. Preparation of culture techniques using streak plate method **(6 Hours)**
7. Prepare pure culture techniques using pour plate method **(6 Hours)**
  
8. Staining techniques - Simple and Differential **(6 Hours)**
9. Microbiological analysis of water. **(6 Hours)**
10. Isolation of spoilage organisms from different food commodities. **(6 Hours)**

**Text Books**

1. Vivek Kumar. (2011). *Laboratory manual of Microbiology*. Scientific Publishers (India)
2. Bharti Arora and D.R. Arora. (2007). *Practical Microbiology*. New Delhi CBS Publishers & Distributors.

**Reference Books**

1. Casida, L.E, J.R, (2012). *Industrial Microbiology*. New Age Publications. New Delhi.
2. Michael J Waite, Neil L Morgan. (2001). *Industrial Microbiology: An Introduction*. Blackwell Science Ltd. UK.
3. Rao, A.S. (2001). *Introduction to Microbiology*. Hall of India Private Ltd. New Delhi.

**Web Links**

1. <http://microbiologysociety.org>
2. <https://www.futurelearn.com>

**Pedagogy:**

Demonstration, E-content, Lecture, Power point presentation

**Course Designers**

- Ms. S. FATHIMA
- Ms. T.R. REVATHI