

**SEMESTER III**  
**Food Science and Sensory Evaluation**

**OBJECTIVES:**

**This course will enable students to:**

1. Understand nature and composition of food
2. Know the role of different ingredients along with methods and principles used in food preparation
3. Understand the changes occurring in foods during cooking.
4. Learnt the sensory evaluation and its applications.

Subject	Total Credits	Th	Pr	Internal	External	Total
<b>Food Science and Sensory Evaluation</b>	<b>4</b>	<b>3</b>	<b>1</b>	<b>25</b>	<b>75</b>	<b>100</b>

**Food Science and Sensory Evaluation Theory**

Module No	Objectives	Content	Assessment
<b>1</b>	<p><b>This module will enable students to:</b></p> <ol style="list-style-type: none"> <li>1. Understand the importance of Sensory evaluation and use different Sensory Evaluation Techniques.</li> <li>2. Understand the role of water and be familiar with composition of different beverages.</li> <li>3. Understand the stages of sugar cookery and their uses in food preparations.</li> <li>4. Know the composition and properties of fats and their role in food preparation and processing.</li> </ol>	<ul style="list-style-type: none"> <li>• <b>Introduction to Food Science.</b></li> <li>• <b>Sensory Evaluation</b> Sensory characteristics of food, Importance and objectives of Sensory evaluation and its Prerequisites, Tests for Sensory Evaluation: Sensitivity Threshold test Difference test – paired comparison, triangle and Duo-trio test, Rating test – Hedonic, Numerical, Composite scoring and ranking test</li> <li>• <b>Water:</b> Role of water in cookery, Forms of water – Bound and free water. Types of water - Hard and Soft.</li> <li>• <b>Beverages:</b> Types and Classification. Coffee, Tea, Cocoa Processing.(In Brief)</li> <li>• <b>Sugar Cookery:</b> Types of sugar, stages of sugar cookery and inversion of sugar. Crystallization and factors affecting crystallization. Crystalline candies and Non Crystalline candies</li> <li>• <b>Fats and Oils:</b> Physical properties – plasticity, smoke point and flash point. Functional role of fats – flavor, texture, tenderness, emulsification, shortening and leavening effects. Emulsions – Types of Emulsions.</li> </ul>	<p>25 Marks</p> <p>Quiz/ Assignments/ Projects/ Presentations</p>

		Rancidity - types and prevention. Antioxidants flavor reversion. Fat absorption and factors affecting it	
2	<p><b>This module will enable students to:</b> Know the composition of specific foods of plant origin</p> <p>1.Understand the changes occurring in various food components during cooking with their applications. 2.Know the role of various foods in cookery</p>	<ul style="list-style-type: none"> <li>• <b>Cereals :</b> Structure and composition of a cereal grain, Properties of starch – Thickening and Gelatinization, Gel Formation, syneresis, Retrogradation and Lump formation, Dextrinization, Identity of grains, Gluten formation – Factors affecting Gluten formation.</li> <li>• <b>Leavening agents:</b> Natural and Chemical and their action.</li> <li>• <b>Pulses and legumes:</b> Composition, toxic factors, their effects, and elimination, soaking, fermentation and germination,</li> <li>• <b>Vegetable and Fruits:</b> Composition, color pigments and effect of cooking on them Pectic substances: forms – Pectin, Protopectin, Pectic acid, Pectinic acid, Theory of gel formation. Vegetables gums and their commercial uses.</li> </ul>	<p>25 Marks</p> <p>Quiz/ Assignments/ Projects/ Presentations</p>
3	<p><b>This module will enable students to:</b> 1.Know the composition of specific foods of animal origin 2. Understand the changes occurring in various food components during cooking with their applications.</p>	<ul style="list-style-type: none"> <li>• <b>Milk:</b> Composition, effect of heat,acid, alkali and enzymes on milk, scum formation, maillard reaction</li> <li>• <b>Egg:</b> Structure and composition of egg, protein in egg white and egg yolk. Methods to judge egg quality (grading). Physical and chemical changes during egg storage, Egg foamsand uses.Role of egg in cookery and methods of cooking egg.</li> <li>• <b>Meat, Fish and Poultry-</b>Composition, Structure, post mortem changes, ripening of meat, tenderization of meat and changes during meat cooking.</li> <li>• <b>Fish:</b> Classification, quality indicators of fish, types of fish spoilage, gelatin, and Fish Protein Concentrate (FPC).</li> </ul>	<p>25 Marks</p> <p>Quiz/ Assignments/ Projects/ Presentations</p>

**Evaluation:**

1.Internal – Theory 25 marks + Practical 25 marks = 50 /2 = 25 marks

2.External – Theory 75 marks

## References

1. Srilakshmi, B: (2010) Food Science, 5<sup>th</sup> Edition, New Age International Pvt Ltd Publishers
2. Shadaksharaswamy, M, Manay, S, (2010): Food facts and Principles, 3<sup>rd</sup> Edition, New Age International Publishers
3. Bennion, M. Scheule, B.: (2009): Introductory Foods, 13<sup>th</sup> Edition, Prentice Hall Publications
4. Manay, S. (2009) Foods Facts ,New Age International Pvt Ltd Publishers
5. Subbulakshmi, G, Udipi, S. A (2006): Food processing and Preservation, New Age International Pvt Ltd Publishers
6. Potter, N. N., Hotchkiss J. H: (1999), Food Science , 5<sup>th</sup> Edition, Springer Publications
7. Freeland-Graves, J., Peckham, G. C, (1995): Foundations of Food Preparation (6<sup>th</sup> Edition), Prentice Hall Publishers.
8. Rao E., and Sethi M., (2011) CBS Publications and Distributors.
9. Rao E., 2<sup>nd</sup> Edition, (2011) Food Quality Evaluation, Variety Books Publication and Distributors.

## Food Science and Sensory Evaluation Practical

Objectives:

This course will enable students to:

1. Understand nature and composition of food
2. Observe the principles of Food Science
3. Comprehend the role of different ingredients used in food preparation / processing.
4. Learn various tests of sensory evaluation of and their applications.

Module No	Objectives	Content	Assessment
I	<p><b>This module will enable students to:</b></p> <ol style="list-style-type: none"> <li>1. Understand the importance of Sensory evaluation</li> <li>2. Comprehend and understand the role of ingredients and their behavior during preparation and processing.</li> </ol>	<p><b>1. Tests for Sensory Evaluation</b> Sensitivity Threshold test, difference test – paired comparison, triangle and duo-trio test, scoring and ranking test.</p> <p><b>2. Sugar Cookery</b> Preparation of sugar syrups for example: 1 thread, 2 threads, softball, crack stage and caramelization.</p> <p><b>3. Starch Cookery</b> Stiffness of starch gel and factors affecting it Factors affecting gluten formation i.e. kneading time, types of cereal and flours, effect of amount of fat etc.</p> <p><b>3. Fat Cookery:</b> Shortening effect and</p>	<p>25 Marks</p> <p>Continuous assessment.</p>

		factors affecting fat absorption. 4. <b>Milk Cookery</b> - Preparation of Curd, Paneer, Maillard Reaction. 5. <b>Egg Cookery</b> - Role of Egg – Boiled, poached, Omelet, French toast and mayonnaise.	
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**\*Evaluation Pattern:**

- Each cooking practical to be evaluated out of 10 marks
- Average marks for each module to be aggregated at 25 marks