

**STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI - 600 086**  
**B.Sc. DEGREE: BRANCH VI.A. - ADVANCED ZOOLOGY AND BIOTECHNOLOGY**

**SYLLABUS**  
**(Effective from the academic year 2015 – 2016)**

**FUNDAMENTALS OF FOOD SCIENCE**

**CODE: 15ZL/UI/FS23**

**CREDITS: 3**

**OBJECTIVES OF THE COURSE**

- To understand the fundamentals of Food Science
- To encourage Entrepreneurship

**Unit 1**

**Food Chemistry and Nutrition**

- 1.1 Introduction to Food Chemistry
- 1.2 Food Guide and Usage - Basic Five Food Groups - Malnutrition - Fortification
- 1.3 Diet Therapy: Purpose and Principles - Diet in Diabetes mellitus and Cardiovascular Diseases
- 1.4 Dietary Management

**Unit 2**

**Food Microbiology and Sanitation and Hygiene**

- 2.1 Microbial Growth-Growth Curve of Bacteria
- 2.2 Food Contamination and Spoilage –Vegetables and Fruits
- 2.3 Fish and Other Sea Food
- 2.4 Importance of Personal Hygiene of Food Handler - Safety in Food Storage - Handling and Preparation
- 2.5 Methods of Sterilization - Use of Detergents - Heat and Chemicals

**Unit 3**

**Post Harvest Technology and Food packaging**

- 3.1 Cereals and Legumes - Oil Seeds - Fruits and Vegetables - Meat Fish and Poultry
- 3.2 Fermentation Technology
- 3.3 Fortification Technology - High Protein Technology - Extruded Foods
- 3.4 Packaging Functions and Packaging Materials
- 3.5 Types of Packaging - Shrink-Strip – CFB – Glass – Tetrapak - Rigid Containers – Plastic- Shelf-Life- Plastic numbers-Bio Polymer
- 3.6 Quality Testing of Packaging

**Unit 4**

**Food Adulteration and Food Toxicology**

- 4.1 Detection of Food Adulteration in Food Grains, Dhal, Oil, Spices and Ghee
- 4.2 Estimation of Benzoic Acid and BOAA Test
- 4.3 Food Toxicology - Naturally Occurring Food Toxicants
- 4.4 Hazards of Pesticides and Heavy Metals in Food
- 4.5 Food Labeling

## Unit 5

### Sensory Evaluation & Quality Control

- 5.1 Factors affecting Food Acceptance - Sensory, Psychological
- 5.2 Objective Methods of Sensory Evaluation
- 5.3 Quality Control and its Importance - Food Laws

### BOOKS FOR REFERENCE

- Banwart, George J. *Basic Food Microbiology*. New Delhi: CBS, 1987.
- Brown, Judith E. *Nutrition Now*. Wadsworth Thomson Learning, 2003.
- Frazier. *Food Microbiology*. New York: Mc Graw Hill, 1988.
- Insel, Paul.R. Elaine Turner and Don Ross. *Discovering Nutrition*. Jones and Bartlett, 2007.
- Jay, James.M. *Modern Food Microbiology*. McGraw Hill, 1996.
- Marriot, Norman G. *Principles of Food Sanitation*. AVI Publishing, 1989.
- Maynard A., Amerine, Rose Marie P. & Edward B. Rossler. *Principles of Sensory Evaluation of Food*. New York, 1965.
- Swaminathan, Geetha and Mary George. *Laboratory Chemical Methods in Food Analysis*. Chennai: Margham, 2002.

### JOURNALS

- Food Science and Nutrition  
Journal of Nutrition and Food Sciences  
International Journal of Nutrition and Food Sciences

### WEB RESOURCES

- <http://www.foodnavigator-asia.com/>  
<http://www.foodandnutrition.org/>  
<https://www.ift.org/>

### PATTERN OF EVALUATION

#### END SEMESTER EXAMINATION:

**Total Marks: 100**

**Duration: 3 hours**

#### QUESTION PAPER PATTERN

- Section A – 10 x 3 = 30 Marks (All questions to be answered)  
Section B – 5 x 6 = 30 Marks (5 out of 7 to be answered)  
Section C – 2 x 20 = 40 Marks (2 out of 4 to be answered)

**STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI - 600 086**  
**B.Sc. DEGREE: BRANCH V.I.A. - ADVANCED ZOOLOGY AND BIOTECHNOLOGY**

**SYLLABUS**  
**(Effective from the academic year 2015 -2016)**

**INTRODUCTION TO WILDLIFE BIOLOGY**

**CODE: 15ZL/UI/WB23**

**CREDITS : 3**

**OBJECTIVES OF THE COURSE**

- To acquaint students with various aspects of wildlife biology and habitat ecology
- To sensitize the students to the need for conservation of wildlife

**Unit 1**

- 1.1 Introduction to Ecology: Habitats and Niches – Resource Partitioning
- 1.2 Landscape Ecology– High Altitude Ecology - Wetland Ecology
- 1.3 Natural Resource Management

**Unit 2**

- 2.1 Population Dynamics - Concepts - Animal Dispersions and Animal Populations
- 2.2 Population Growth and Its Regulation –Growth without Regulation - Regulation of Population Densities, Demographic Data
- 2.3 Factors Affecting Population Size – Space, Food and Water, Territories, Herbivores and Predators, Weather and Climate, Parasites and Diseases, Natural Disasters, Self Regulation and Stress.
- 2.4 Wildlife Population Estimation Methods – Direct – Indirect – Making Observations – Field Notes and Photographic Records; Use of Field Equipment: Binocular, Telescope, Camera, Tally Counter, GPS and Radio Telemetry

**Unit 3**

- 3.1 Biogeography and Wildlife Habitat: Species Distribution, Patterns, Continental Drift, Factors Affecting Animal Distribution, Biogeographic Zones of India-Endemism
- 3.2 Wildlife – Definition – Values- Biology of Indian Wildlife; Salient Features of Important Wild Animals – Insects and Other Arthropods – Fishes – Amphibians - Reptiles - Birds – Mammals
- 3.3 Man – Wildlife Interactions and Conflicts– Ecological Impacts – Concepts, Principles and Human Dimensions in Wildlife Management

**Unit 4**

- 4.1 Wildlife Tourism – Viewing Animals in the Wild–Wildlife Damage Management - Wildlife Crimes and Forensics
- 4.2 Wildlife Trade - Wildlife Protection -Legislations and Acts – Role of NGOs – Role of Institutions and Organizations
- 4.3 Planning and Execution of Field Surveys – Sampling Methods - Capture and Handling of Wild Animals
- 4.4 Principles of Wildlife Health – Wildlife Diseases

## Unit 5

- 5.1 Need for Conservation – Strategies – *In Situ* – *Ex Situ*
- 5.2 Planning and Implementing Conservation Programmes: Wildlife Projects, Conservation Genetics and Conservation Management — Nutrition of Captive and Free Ranging Wild Fauna
- 5.3 Zoo Designing - Management and Husbandry of Zoo Animals

### BOOKS FOR REFERENCE

- Anderson S.H. *Managing our wildlife resources*. Prentice Hall, 2002.
- Caughley, G. and A. R. E. Sinclair. *Wildlife Ecology and Management*. Boston: Blackwell Scientific, 1994.
- Fulbright, Timothy E. and David G. Hewitt. *Wildlife Science: Linking Ecological Theory and Management Applications*. CRC, 2007.
- Gilberts, Frederick F. and Donald G Dodds. *The Philosophy and Practice of Wildlife Management*. Krieger, 2001.
- Krausman, P.R. *Introduction to Wildlife Management - the Basics*. USA: Prentice Hall, 2002.
- Krausmann, P. R. *Wildlife Ecology and Management*. U.S.A:Prentice Hall, 2002.
- Newsome, David, Ross Dowling and Susan Moore. *Wildlife Tourism*. Cromwell, 2005.
- Silva, N.J. *The Wildlife Techniques Manual: Research & Management*. The Johns Hopkins University Press, 2012.
- Wobeser, Gary A. *Disease in Wild Animals: Investigation and Management*. Springer Verlag, 2007.

### JOURNALS

- Conservation Biology
- Asian Journal of Conservation Biology
- Wildlife Biology

### WEB RESOURCES

- <http://www.worldwildlife.org/>
- <http://www.wwfindia.org/>
- <http://www.natureaustralia.org.au/>

### PATTERN OF EVALUATION

#### END SEMESTER EXAMINATION:

Total Marks: 100

Duration: 3 hours

Section A – 10 x 3 = 30 Marks (All questions to be answered)

Section B – 5 x 6 = 30 Marks (5 out of 7 to be answered)

Section C – 2 x 20 = 40 Marks (2 out of 4 to be answered)