

The Islamia University of Bahawalpur

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Tentative Course Plan DEPARTMENT OF BOTANY

Class: BS Botany

Semester-6th (Botany)

Session: 2017-21

Instructor	Ghulam Sarwar		Email: lifesci.flora786@gmail.com	
Course Title	Introduction to Food Microbiology		Program	BS Botany
Course Number	BOTA- 01605		Credit Hours	3(2+1)
Lectureday: period (00:00a.m to 00: 00a.m), Room# 00			
Course Objective: To provide students with brief introduction to fundamental concepts of food related Microbiology. To elucidate the basic principles of food preservation. To introduce the basic concepts of foodstuff hygiene.				
Course Outcomes:				
Methods of Teaching <ul style="list-style-type: none">Assigned readings ✓Group activities & Discussion ✓Audiovisual aids lectures ✓Web-assisted instruction ✓Student-Directed Teaching ✓				
Resource Material	Books Prescribed: 1. Martin R. Adams and Maurice O. Moss 2008. Food Microbiology 3 rd Ed. Published by The Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge CB4 0WF, UK 2. Frazier, W.C., Westhoff, D. C. 2008. Food microbiology. McGraw Hill Book Co., New York, USA.			
	2.Reference Book		3.Research Papers	
	i		i	
	ii		ii	
	4.Hot Research Papers		5.Web Resources	
	i		i	
	ii		ii	
Office Help Hoursday: period (00:00a.m to 00: 00a.m), Room# 00			
Grading	Exam (Date to be announced) Mid- Exam (30%) Final Exam (50%) Problem Session/Assignments (20%)			
Problem Sessionday: period (00:00a.m to 00: 00a.m), Room# 00			
SEQUENCE OF TOPICS TO BE COVERED				
Session	Topics (outline of main topics and sub topics)		Chapter #	Tutorial /Laboratory
1	Introductory lecture to the subject			Media preparation and culturing techniques for various microorganisms. i.e. Bacteria, Yeast and Molds.
2 & 3	Micro-organisms and Food, Food Spoilage/Preservation		The Scope of Food Microbiology	
4 & 5	Food Safety, Fermentation, Microbiological Quality Assurance.			
5 & 6	Diversity of Habitat, Micro-organisms in the Atmosphere		Micro-organisms and Food Materials	Staining and slide preparation for microscopic examination of cultured and collected microorganisms. i.e. Bacteria, Yeast and Molds.
7& 8	Airborne Bacteria, Airborne Fungi,			
9 & 10	Micro-organisms of Soil, Micro-organisms of Water			
11 & 12	Micro-organisms of Plants, Micro-organisms of Animal Origin, The Skin, The Nose and Throat.		-do-	examination of cultured and collected microorganisms. i.e. Bacteria, Yeast and Molds.
13 & 14	Microbial Growth, Intrinsic Factors (Substrate Limitations), Nutrient Content, pH and Buffering Capacity, Redox Potential, Water Activity, Antimicrobial Barriers and Constituents.		Factors Affecting the Growth and Survival of Micro-organisms in Foods	
15, 16	Extrinsic Factors (Environmental Limitations) Relative Humidity, Temperature, Gaseous Atmosphere, Implicit Factors.			
	Mid Term Exams			

17&18	Heat Processing: Pasteurization and Appertization, Quantifying the Thermal Death of Micro-organisms: D and Z Values, Heat Sensitivity of Micro-organisms, Spoilage of Canned Foods, Aseptic Packaging	The Microbiology of Food Preservation	Fermented Vegetables: Sauerkraut and Kimchi, Olives, Cucumbers
19&20	Irradiation: Microwave Radiation, UV Radiation, Ionizing Radiation High-Pressure Processing –Pascalization Low-Temperature Storage–Chilling and Freezing: Chill Storage, Freezing		
21&22	Chemical Preservatives: Organic Acids and Esters, Nitrite, Sulfur Dioxide, Natamycin, Natural Food Preservatives. Modification of Atmosphere, Control of Water Activity, Compartmentalization	-do-	Indicator Organisms
23 &24	. What is Spoilage? Milk: its Composition, Microflora of Raw Milk, Heat Treatment of Milk, Milk Products. Meat: Structure and Composition, The Microbiology of Primary Processing, Spoilage of Fresh Meat	Microbiology of Primary Food Commodities	Preparation of samples and Enumeration of micro-organisms. I. Plate Counts II. Most Probable Number Counts
25 &26	Fish: Structure and Composition, The Microbiology of Primary Processing, Crustaceans and Molluscs, Spoilage of Fresh Fish Plant Products: Cereals, Preservation of High-moisture Cereals,		
27	Pulses, Nuts and Oilseeds, Fruits and Fruit Products, Vegetables and Vegetable Products		
28&29	Food Hazards, Significance of Foodborne Disease, Incidence of Foodborne Illness, Risk Factors Associated with Foodborne Illness, The Changing Scene and Emerging Pathogens.	Food Microbiology and Public Health	Legislation, codes of practice and microbiological criteria.
30	The Site of Foodborne Illness -The Alimentary Tract: Its Function and Microflora, The Pathogenesis of Diarrhoeal Disease	-do-	The Hazard Analysis & Critical Control Point (HACCP) Concept
31	Mycotoxins: Two to three examples.	Toxigenic Fungi	
32	Course/Discussion from session 1- 31		
	Final Term Exam		

Student Evaluation criteria:	
Attendance	5%
Workshop / Assignments/Case study	5%
Surprise Test/Sudden Test , Quizzes	5%
Class Participation	5%
Mid Term Paper	30%
Final Term paper	50%
Total	100%

Student Responsibilities:

Students must attend class. Failure to attend class may result in failure in the course. Students must also arrive on time and remain in class for the entire period. Cellular Phones and Beeper must be Turned off (Proper classroom decorum [behavior] adopts, Course outlines and calendars explain requirements and assignments, students are responsible for knowing what they say. Students are also responsible for doing all assigned work on time. Excessive absences (more than 03) will result in “F Grade”. Students may prepare Sketchbook for taking notes and for references.

Instructor/Tutor

Approved by:

Chairman