

**ALLAMA IQBAL OPEN UNIVERSITY, ISLAMABAD**  
(Department of Home & Health Sciences)

Course: Food Analysis I (1783)  
Level: MS Community Health & Nutrition

Semester: Spring 2014  
Credit: 3(2+1)

**CONTENTLIST**

Following items are included in the study pack.

1. Course Book (Unit 1-9)
2. Theory Assignments One
3. Practical Assignment One
4. Assignment's Forms Six
5. Schedule for submitting the assignments & tutorial meeting.

Note: If any one of the above items is missing from your study packet, kindly contact:

The Mailing Officer  
Mailing Section  
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AIOU, H-8, Islamabad.  
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**WARNING**

**PLAGIARISM OR HIRING OF GHOST WRITER(S) FOR SOLVING THE ASSIGNMENT(S) WILL DEBAR THE STUDENT FROM AWARD OF DEGREE/CERTIFICATE, IF FOUND AT ANY STAGE. SUBMITTING ASSIGNMENTS BORROWED OR STOLEN FROM OTHER(S) AS ONE'S OWN WILL BE PENALIZED AS DEFINED IN "AIOU PLAGIARISM POLICY".**

**Course:** Food Analysis I (1783)

**Semester:** Spring, 2014

**Level:** MS Community Health & Nutrition

**Total Marks:** 100

**Credit:** 3(2+1)

**Pass Marks:** 50

**ASSIGNMENT No. 1**

**(Unit 1-7)**

- Q. 1 Describe steps involved in the food analysis. What do you mean by official methods used for analysis of food items? Explain it with appropriate examples. (15)
- Q. 2 Summarize the US Federal Regulation affecting food composition. Also summarize the pesticide tolerance level and drinking water standards. (15)
- Q. 3 What do you know about food labeling & regulations? Discuss in detail. (15)
- Q. 4 Describe the difference components in reliability of analysis. (15)
- Q. 5 Define sampling & what do you know about sampling preparation? Discuss it in particular reference to food analysis. (15)
- Q. 6 Differentiate between titratable acidity & pH. Summarize the principle to measure titratable acidity & pH. (15)
- Q. 7 Discuss different methods used in fat analysis in detail. (10)

## ASSIGNMENT No.2

**Total Marks: 100**

**Pass Marks: 50**

A workshop is compulsory for all the students. Marks obtained during the workshop will be included in your final result. This assignment is practical in nature and all the students will have to perform following practical's in lab under-supervision of tutor & prepare a practical notebook.

### **Practical No.1**

Take some different food (at least 10) items from departmental store and summarize Nutrient Contents Claimed. (15)

### **Practical No.2**

Prepare the representative sample from different food items given (at least five) including liquid (water or other liquid), semisolid (yoghurt or jam) and solid (grains/beans) for nutritional & microbial analysis. (15)

### **Practical No.3**

Measuring of titratable acidity & pH of five different kinds of food items. (15)

### **Practical No.4**

Determination of organic molecules in food by using immunoassays. (15)

### **Practical No.5**

Which accurate method is used for determination of protein? Explain its principle and estimate protein in a given sample of pulses. (15)

### **Practical No.6**

Determination of fat contents in soybean/peanuts seeds. (15)

**Note Book & Viva Voce**

(10)

## **FOOD ANALYSIS 1**

(Course outline)

Credit: 3(2+1)

Level: Post Graduate

Course Code: 1783

### **Unit 1: Introduction to food analysis,**

Trends and Demands, Types of Samples Analyzed, Steps in Analysis, Choice and Validity of Method, Official Methods

### **Unit 2: United States Government Regulations and International Standards Related to Food Analysis**

US Federal Regulations Affecting Food Composition, Regulations and Recommendations for Milk, Regulations and Recommendations for Shellfish, Voluntary Federal Recommendations Affecting Food Composition, International Standards and Policies

### **Unit 3: Nutrition Labeling**

Nutrition Labeling and Education, Food Labeling Regulations, Daily Values and Serving Size, Caloric Content, Nutrient Content Claims, Health Claims

### **Unit 4: Evaluation of Analytical Data**

Measures of Central Tendency, Reliability of Analysis, Sources of Errors, Curve Fitting; Regression Analysis, Linear Regression, Correlation Coefficient, Reporting Results, Significant Figures, Rejecting Data

### **Unit 5: Sampling and Sample Preparation**

Selection of Sampling Procedures, Factors Affecting the Choice of Sampling Plans, Sampling Procedures, Preparation of Samples, Grinding

### **Unit 6: pH and Titratable Acidity**

Introduction, Calculation and Conversion for Neutralization Reactions, Acid-Base Equilibria, pH Meter, Titratable Acidity, Indicators, Preparation of Reagents, Calculation of Titratable Acidity, Acid Content in Food

### **Unit 7: Fat Characterization**

Definitions and Classifications, Importance of Analyses, Lipid Content in Foods and Typical Values, Refractive Index, Smoke, Melting Point, Flash, and Fire Points, Iodine Value, Cloud Point, Methods for Bulk Oils and Fats, Free Fatty Acids and Acid and Acid Value

**Unit 8: Protein Separation and Characterization Procedures**

Methods of Protein Separation, Protein Characterization Procedures, Separation by Differential Solubility Characteristics, Separation by Size, Separation by Electrophoresis, Protein Characterization Procedures, Amino Acid Analysis

**Unit 9: Immunoassays**

Definitions, Binding Between Antigen and Antibody, Types of Antibodies, Enzyme Immunoassay Variations

**Referred Books**

Food Analysis *Fourth Edition* (2010) *edited by S. Suzanne Nielsen* **Purdue University West Lafayette, IN, USA** ISBN 978-1-4419-1477-4