

**Certificate Course**  
**in**  
**Analytical Techniques for Quality Control**

**Unit I - Quality Control of Food Materials**

**(6hrs)**

Definition of quality control, Need and importance of quality control, principles of quality control, food related hazards - physical, chemical and biological hazards, factors affecting food safety, quality attributes of food-nutritional, microbial and sensory attributes, Sampling Method of Quality Evaluation – objectives, guidelines, Quality assurance in Food Services System-difference between quality assurance and quality control, total quality control (TQC), statistical quality control (SQC).

**References:**

1. An introduction to Food Science and Technology & Quality management - Devendra Bhatt & Priyanka Tomar.
2. Quality assurance in Microbiology, Bhatia,R. and Ichhpujan, R.L. CBS Publishers and Distributors, New Delhi. 2004.
3. Food Quality Management - Manoranjan Kalia.
4. Hand book of analysis & Quality Control - Rannanganna.
5. Kher, C.P. Quality control for the food industry. ITC Publishers, Geneva. 2000.

**Unit II - Food Standard Laws and Safety Management**

**(6hrs)**

Voluntary and compulsory standards, packaging and labeling, standards food laws – Hazard Analysis Critical Control Point (HACCP), CCP, Codex Alimentarius Commission (CODEX), National Codex Committee of India, ISO-22000, ISO-9001:2000, ISO22000:2005, ISO 17025/CODES/GLP, food quality management- quality management principles, external quality control activities, certification and quality marks, national standard bodies – (British Retail Consortium) BRC food and BRC IoP (Institute of Packaging) standards, (International Food Standard) IFS, (Safe Quality Food standard) SQF: 1000, SQF: 2000.

**References:**

1. Gazette of Food Safety and Standards Act, (2006) Food Safety regulations and food safety management. Food Safety and Standards Authority of India. New Delhi.
2. The training manual for Food Safety Regulators. (2011) Vol.III, Food Safety regulations and food safety management. Food Safety and Standards Authority of India. New Delhi.
3. Jellinek, G., Sensory Evaluation of Food-Theory and Practice., Elis Horwood Ltd.,England.,1985.

4. Manay,S., Shadaksharaswamy, M., Food Facts and Principles, New Age International (P) Limited., New Delhi., 2008.

### **Unit III – Introduction to Food Analysis**

**(6hrs)**

Introduction to food analysis, Sampling, Population, Proximate Principles , Importance of sampling , Sampling technique ,Types of sampling , Sampling Plan ,Preparation of sample, Problems in sampling

#### **References:**

1. Kalia, M. Food Analysis and Quality Control. Kalyani Publishers, New Delhi. 2002.
2. Winton, A.L and Winton, K.B. Techniques of food analysis. Allied Scientific Publishers, NewDelhi. 1999.
3. Nielsen, S.S. Introduction to the chemical analysis of foods. Jones and Bartlett Publishers, Boston, London. 2003.

### **Unit IV –Physical Methods of Food Analysis**

**(6hrs)**

Food Rheology, Viscosity, Surface Tension, Refractometry, Polarimetry, Freezing point, Specific gravity.

#### **References:**

1. Pearson, D. The Chemical Analysis of Foods. Churchill Livingstone, New York. 2002.
2. Sharma, B.K. Instrumental Methods of Chemical Analysis. Goel Publishing House,New Delhi. 2004.
3. Kalia, M. Food Analysis and Quality Control. Kalyani Publishers, New Delhi. 2002.
4. Winton, A.L and Winton, K.B. Techniques of food analysis. Allied Scientific Publishers, NewDelhi. 1999.
5. Nielsen, S.S. Introduction to the chemical analysis of foods. Jones and Bartlett Publishers, Boston, London. 2003.

### **Unit V - Analytical Methods Used for Food Quality Determination**

**(6hrs)**

Principle, working and applications of paper chromatography, TLC, GC, HPLC, HPTLC, LC/MS, inductively coupled Plasma Mass Spectrometry (ICP-MS), Spectrophotometry- introduction and principles of UV –Visible spectroscopy, Fluorimetry Atomic absorption spectroscopy, Radiotracer techniques and Electrophoresis.

**References:**

1. Nielsen, S.S. Introduction to the chemical analysis of foods. Jones and Bartlett Publishers, Boston , London.2004.
2. Mahindru,S.N. Food additives. Characteristics, detection and estimation. Tata Mc Graw-Hill Publishing Company Limited, New Delhi.2000.
3. Pearson, D. The Chemical Analysis of Foods. Churchill Livingstone, New York. 2002.
4. Sharma, B.K. Instrumental Methods of Chemical Analysis. Goel Publishing House,New Delhi. 2004.