

To

The Principal

Khalsa College

Amritsar

Subject: introduction of value added courses

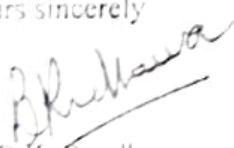
Respected Sir,

With reference to the letter no. 125 dated on 23 January 2023, please find enclosed the following value added courses introduced at different degree level

1. B.Sc Chem/ B.Sc Hons Chem I year - **Basic Lab Practices & Techniques** - Dr. Suddesh Kaur
2. B.Sc Chem/ B.Sc Hons Chem II year - **Water Quality analysis** - Dr. Harpreet Kaur
3. B.Sc Chem/ B.Sc Hons Chem III year - **Applications of computer Software's in Chemistry** - Dr. Ashu Mahal
4. M.Sc Chem/ M.Sc Hons Chem I year - **Basic Principles and instrumentation of commonly used instrument** - Dr. Uma Kaur
5. M.Sc Chem/ M.Sc Hons Chem II year - **Food Adulteration and Chemical Testing** - Dr. ~~Uma Kaur~~ - Dr. Umdeep Kaur

Thanking You

Yours sincerely


Dr. B.K. Randhawa

HOD, PG Department of Chemistry

Value added Courses

PG Dept of Chemistry

B.Sc Chem/ B.Sc Chemistry (under the Honours Scheme) I year

Course Title: Basic Lab Practices & Techniques

Course Duration: 30 hrs.

Theory: Good lab practices, wet chemistry techniques, distillation and degassing of water, drying of chemicals, weighing and measuring of salts and chemicals using analytical balance, pipetting, and volume transfer techniques, preparation and measurement of solutions on normality, molarity, mass and weight basis.

Purification and separation of solid-liquid mixtures, liquid-liquid mixtures and solid-solid mixtures using techniques such as filtration, distillation, separatory funnel and thin layer chromatography (TLC) and retention factor, recrystallization.

Practical:

1. Prepare 1N solution of hydrochloric acid and 1N solution of sodium hydroxide.
2. Separate the mixture of water and CCl_4 .
3. Determine the retention factor for Sudan-red and Sudan-yellow dye.
4. Prepare the solution of sodium chloride in degassed water.

B.Sc Chem/ B.Sc Chemistry (under the Honours Scheme) II year

Course Title: Water Quality analysis

Course Duration: 30 hrs.

Theory: Theoretical principle of determination of Total Alkalinity of water, total hardness of the water sample, pH of ground and waste water, Dissolved oxygen of waste water, Chemical oxygen demand of waste water, salinity of the given water sample, turbidity of various water sample, detection and measurement of various contaminant using spectrophotometric method such as nitrate, chloride, fluoride, iron, micro-pollutants.

Practical:

1. To determine pH measurement of ground water.
2. To determine the total solids, suspended solids, dissolved solids and volatile solids in wastewater.
3. To determine the turbidity and specific conductivity of the given water samples.
4. To determine the Alkalinity of given water sample.
5. To determine total hardness, permanent hardness and temporary hardness for given water sample.

B.Sc Chem/ B.Sc Chemistry (under the Honours Scheme) III year

Course Title: Applications of computer Software's in Chemistry

Course Duration: 30 hrs.

Theory: Introduction to various softwares and their applications

- I. M.S. Excel
- II. Origin61
- III. Kaleida Graph
- IV. Chem draw 15
- V. Sigma plot 10
- VI. Gauss View
- VII. Maestro

Practical:

1. Plot graph of conductance versus molality using excel, origin and Kaleida graph.
2. Draw organic molecules and reactions using chem draw and gauss view.
3. Draw 3-D plot for and 3 variable properties using Sigma plot.
4. Using Maestro, draw or insert protein structures or drug molecules.

M.Sc Chem/ M.Sc Chemistry (under the Honours Scheme) I year

Course Title :Basic Principles and instrumentation of commonly used instrument

Course Duration: 30 hrs.

Theory:

Theory and Principle of: pH meter, conductometer, colorimeter, spectrophotometer, polarimeter, FTIR: calibration, operation procedures and its applications. Accuracy and precision, least count, measure of accuracy and precision.

Practical

1. Setting and assembly of different apparatus (distillation apparatus)
2. Setting and calibration of instruments.
3. Record UV-Visible and FTIR data of samples.

Course Title: Food Adulteration and Chemical Testing

Course Duration: 30 hrs.

Theory: Introduction to food adulteration, types of food adulteration, Various Food Adulterants in dairy products, cereal products, meat & eggs, canned & bottled vegetables, fruits & fruit products, fats & oils, beverages etc. Usage of high doses of preservatives like formalin. Risks of Food Adulteration, Prevention of Food adulteration, Detection of Adulteration.

Practical

1. To check chalk in sugar and common salt.
2. Detection of milk adulteration
3. To detect washing soda in jaggery
4. Detection of water, sugar/ jiggery in honey
5. Detection of starch in paneer
6. Testing the adulteration in ghee for various adulterants.
7. Detection of sawdust in common spices