Department of Chemistry
Keral Verma Subharti College of Science
SWAMI VIVEKANAND SUBHARTI UNIVERSITY
(Established under U.P. Govt. Act no. 29 of 2008 and approved under section 2(f) of UGC Act 1956)
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Ref. No. KVSCOS/2017/ 02

Date: 07-08-2017

NOTICE

It's to inform all students of UG and PG that the Department of Chemistry, KVSCOS, introduced Value Added Course form **16-08-2017** The topics are as follows

- **Basic Analytical Chemistry**
- **Business Skills for Chemists**

Interested students give their name to HOD Chemistry, KVSCOS.

Dr Shraddhya Upadhyaya Shraddha.

HOD Chemistry Department

Registrar
Swami Vivekanand
Subharti University
MEERUT

Course Name: Basic Analytical Chemistry
Course Code:VAC-C-002
Course Coordinator: Dr S. Bala
Designation: Assistant Professor
Contact no.: 8057579950
Duration: 16-08-2017to 30-12-2017

The objective of the program

Distinguish between accuracy and precision, repeatability and reproducibility of data. Discuss the types and sources of errors in analytical chemistry .Apply statistical tests such as Q-test, F-test etc to sets of data. Describe principles and application of various chromatographic separation and thermal analytical methods. Write half-cell, overall cell reaction equations, calculate e.m.f. and explain the principles of electro-analytical techniques .Explain the principles of UV/Visible, IR, AAS and fluorimetry techniques.

REGISTRATION FORM

Name:…….

Enrolment No……

Program:……

Sem. & Year……

Contact No./Mobile:……

E-mail:……

Course Opted:……

Course Code:……

Signature with date:……

Contact Person (Course Coordinator)

Course Name: Basic Analytical Chemistry
Course Code:VAC-C-002
Course Coordinator: Dr S. Bala
Designation: Assistant Professor
Contact no.: 8057579950

Course Schedule

Duration: 16-08-2017to 30-12-2017

Basic Analytical Chemistry

VAC-C-002

Course Contents

Objectives: To familiarize the students with the concept and methods of analytical techniques for soil, water and food.

UNIT 1

Introduction: Introduction to Analytical Chemistry and its interdisciplinary nature. Concept of sampling. Importance of accuracy, precision and sources of error in analytical measurements. Presentation of experimental data and results, from the point of view of significant figures.

Analysis of soil: Composition of soil, Concept of pH and pH measurement, Complexometric titrations, Chelation, Chelating agents, use of indicators.

a. Determination of pH of soil samples. b. Estimation of Calcium and Magnesium ions as Calcium carbonate by complexometric titration.

UNIT 2

Analysis of water: Definition of pure water, sources responsible for contaminating water, water sampling methods, water purification methods.

a. Determination of pH, acidity and alkalinity of a water sample. b. Determination of dissolved oxygen (DO) of a water sample.

Analysis of food products: Nutritional value of foods, idea about food processing and food preservations and adulteration.

a. Identification of adulterants in some common food items like coffee powder, asafoetida, chilli powder, turmeric powder, coriander powder and pulses, etc. b. Analysis of preservatives and colouring matter.

UNIT 3

Chromatography: Definition, general introduction on principles of chromatography, paper chromatography, TLC etc. a. Paper chromatographic separation of mixture of metal ion (Fe^{3+} and Al^{3+}). b. To compare paint samples by TLC method. Ion-exchange: Column, ion-exchange chromatography etc. Determination of ion exchange capacity of anion / cation exchange resin (using batch procedure if use of column is not feasible).

UNIT 4

Analysis of cosmetics: Major and minor constituents and their function

a. Analysis of deodorants and antiperspirants, Al, Zn, boric acid, chloride, sulphate. b. Determination of constituents of talcum powder: Magnesium oxide, Calcium oxide, Zinc oxide and Calcium carbonate by complexometric titration. **Suggested Applications (Any one):**

a. To study the use of phenolphthalein in trap cases. b. To analyze arson accelerants. c. To carry out analysis of gasoline.

Suggested Instrumental demonstrations:

a. Estimation of macro nutrients: Potassium, Calcium, Magnesium in soil samples by flame photometry.

b. Spectrophotometric determination of Iron in Vitamin / Dietary Tablets.

c. Spectrophotometric Identification and Determination of Caffeine and Benzoic Acid in Soft Drink

Course Outcomes	
CO1	Able to analyze soil.
CO2	Know the water analysis and quality of food products.
CO3	Able to apply various chromatographic techniques.
CO4	Know the chemistry of cosmetics.
CO5	Able to handle the possible analytical instruments.

Reference Books:

1. Willard, H.H., Merritt, L.L., Dean, J. & Settoe, F.A. Instrumental Methods of Analysis. 7th Ed. Wadsworth Publishing Co. Ltd., Belmont, California, USA, 1988.
2. Skoog, D.A. Holler F.J. & Nieman, T.A. Principles of Instrumental Analysis, Cengage Learning India Ed.
3. Skoog, D.A.; West, D.M. & Holler, F.J. Fundamentals of Analytical Chemistry 6th Ed., Saunders College Publishing, Fort Worth (1992).
4. Harris, D. C. Quantitative Chemical Analysis, W. H. Freeman.
5. Dean, J. A. Analytical Chemistry Notebook, McGraw Hill.
6. Day, R. A. & Underwood, A. L. Quantitative Analysis, Prentice Hall of India.
7. Freifelder, D. Physical Biochemistry 2nd Ed., W.H. Freeman and Co., N.Y. USA (1982).
8. Cooper, T.G. The Tools of Biochemistry, John Wiley and Sons, N.Y. USA. 16 (1977).
9. Vogel, A. I. Vogel's Qualitative Inorganic Analysis 7th Ed., Prentice Hall.
10. Vogel, A. I. Vogel's Quantitative Chemical Analysis 6th Ed., Prentice Hall.
11. Robinson, J.W. Undergraduate Instrumental Analysis 5th Ed., Marcel Dekker, Inc., New York (1995).

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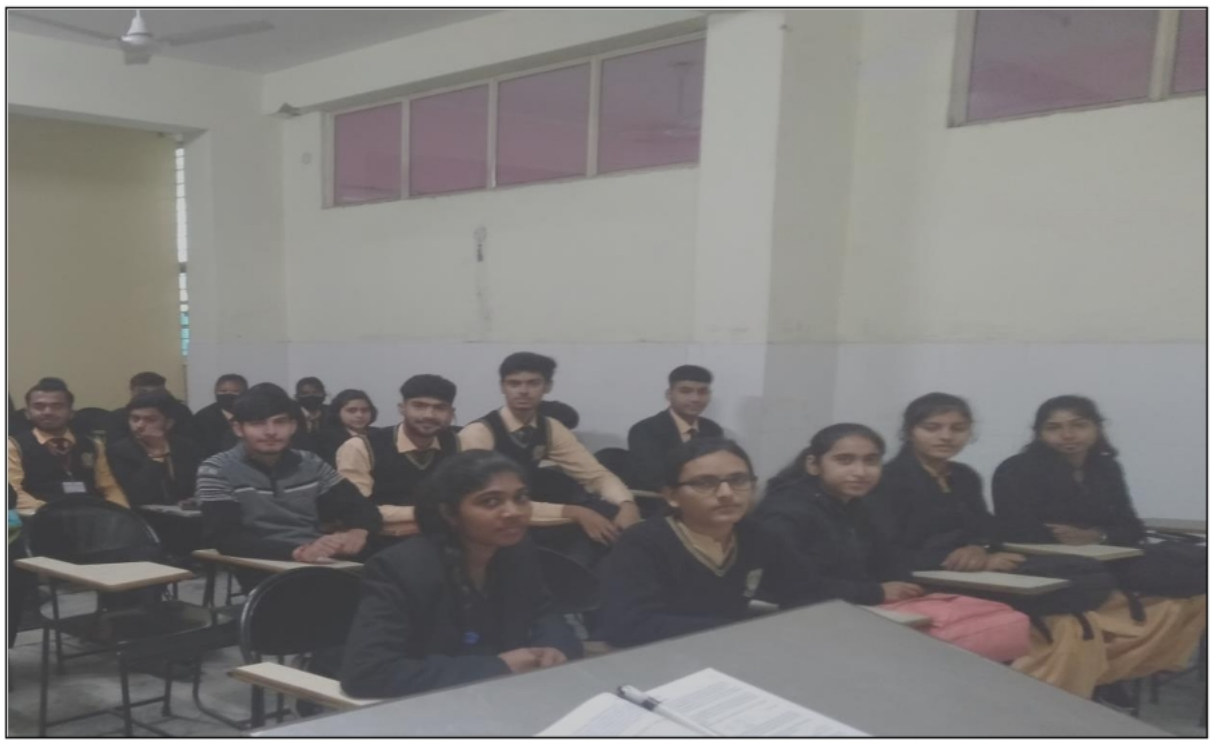
Department of Chemistry

Report on Value Added Course

A value added course on **"Basic Analytical Chemistry"** was conducted in Chemistry department for First year students, Two hour per week. The course starts on **16-08-2017**.The session was handled by **Dr Shashi Bala,** Chemistry on the need for **Basic Analytical Chemistry**. On that session students learnt about the basic analytical techniques used in the chemistry such as chromatography. Students felt that this value added session on **Basic Analytical Chemistry** was very much useful for them and they got the basic idea for developing their knowledge about how to use various Analytical instruments in the chemistry. It is planned to extend this value added training in the next semester with having more refined and advanced tool for their development.

HOD

(Department of Chemistry)



Student List of Value-added Course 2017-2018

Odd Semester
No of Student **:25**
Course Name**: Basics Analytical Chemistry**
Course Code**: VAC-C-002**

S.No.	Course Programme	Name	Student enrollment number
1	BSC H CHEMISTRY	ANSHIKA TYAGI	1706010000980
2	BSC H CHEMISTRY	DEEPANSHI TYAGI	1706010000981
3	BSC H CHEMISTRY	HARDIK PANCHAL	1706010000982
4	BSC H CHEMISTRY	NAINA KARANWAL	1706010000983
5	BSC H CHEMISTRY	NITESH KUMAR	1706010000984
6	BSC H CHEMISTRY	PRACHI SHARMA	1706010000985
7	BSC H CHEMISTRY	VAISHALI GUPTA	1706010000986
8	BSC H CHEMISTRY	VERSHA VERMA	1706010000987
9	BSC H CHEMISTRY	AMBUJ KAUSHIK	1706010001078
10	BSC H CHEMISTRY	NANDANI BHARDWAJ	1706010001079
11	BSC H CHEMISTRY	ADIT SHARMA	1706010001080
12	BSC H CHEMISTRY	MD JAMAL MUZAFFAR	1706010001081
13	BSC H CHEMISTRY	MEDHA GARG	1706010001082
14	BSC H CHEMISTRY	YOGENDRA	1706010001083
15	BSC H CHEMISTRY	HITESHI CHOUDHARY	1706010001204
16	BSC H CHEMISTRY	NIKITA MALIK	1706010001219
17	BSC H CHEMISTRY	AKANSHA BASSI	1706010001226
18	BSC H CHEMISTRY	ANKITA BHARTI	1706010001264
19	BSC H CHEMISTRY	AREEB CHAUDHARY	1706010001428
20	MSC CHEMISTRY	YASH TYAGI	1706020001084
21	MSC CHEMISTRY	VINIT KUMAR	1406010002246
22	MSC CHEMISTRY	TEETU CHAUHAN	1406010002339
23	MSC CHEMISTRY	VANSH TEOTIA	1406010002349
24	MSC CHEMISTRY	KESHAV TYAGI	1406010002466
25	MSC CHEMISTRY	VARSHA SHARMA	1406010002467

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