

COURSE STRUCTURE FOR CAREER ORIENTED PROGRAMMES
(Under CBCS w.e.f. 2014-2015)

Department : CHEMISTRY
Name of the course : DOMESTIC CHEMISTRY AND QUALITY ASSURANCE
 (UGC Approval No. F.No 4-148/2005(COP) dt.16.12.2004)

COURSE CODE	COURSE	COURSE TITLE	TEACHING HOURS	CREDIT	CIA MARKS	SE MARKS	TOTAL MARKS
CERTIFICATE COURSE							
14CHCT1	CORE I	Cosmetics and quality analysis	150	10	40	60	100
14CHCT2	CORE II	Detergents and fuels	150	10	40	60	100
14CHCT3	CORE III	Practical*	150	10	40	60	100
TOTAL			450	30	120	180	300
DIPLOMA PROGRAMME							
14CHDM1	CORE I	Food and drugs	150	10	40	60	100
14CHDM2	CORE II	Fertilizers, glass and dyes	150	10	40	60	100
14CHDM3	CORE III	Practical*	150	10	40	60	100
TOTAL			450	30	120	180	300
GRAND TOTAL			900	60	240	360	600
ADVANCED DIPLOMA PROGRAMME							
14CHAD1	CORE I	Vitamins and Polymers	150	10	40	60	100
14CHAD2	CORE II	Advanced medicines and plant micronutrients	150	10	40	60	100
14CHAD3	CORE III	Practical*	150	10	40	60	100
TOTAL			450	30	120	180	300
GRAND TOTAL			1350	90	360	540	900

* Practical Examinations will be conducted all the end of the year

**DOMESTIC CHEMISTRY AND QUALITY ASSURANCE
CERTIFICATE COURSE
FIRST YEAR
SEMESTER-I: CORE-I
COSMETICS AND QUALITY ANALYSIS**

Course Code : 14CHCT1

Max. Marks : 100

Hours/Week : 150

Internal Marks : 40

Credit : 10

External Marks : 60

Objectives:

- *To acquire knowledge on chemistry applied in day to day activities*
- *To get knowledge about the preparation and uses of several commodities in daily life*
- *To understand the hazards of cosmetics*

UNIT-I

Perfumes, Face powder, Face creams, Suntan lotions, Hair dye and Nail polish-definition, chemical compositions, Formulations and common characteristics.

UNIT-II

Toilet soaps, shampoos and shaving cream- preparation, applications and common characteristics- Hazards of cosmetics- Quality control of cosmetics in India.

UNIT-III

Cosmetics – lipsticks, eye makeup, Hair curling, colouring, growing and removing hairs (depilatories), Hair oils, sprays, creams, Deodorants – Definition, preparation and applications.

UNIT-IV

Water quality- sources of water – physical nature of water – Hard water – Types of hardness – Removal of hardness (boiling and ion-exchange methods) – Quality of drinking water.

UNIT-V

Entrepreneur skills: Manufacture, Characteristics and uses of Chalk, Candles, inks, nail polish, face powder and phenoyls.

TEXT BOOKS:

1. Thangammal Jacob, A textbook of applied chemistry, Mcmillan Company Ind. Ltd, 1979.
2. K.Bagavathi Sundari, Applied Chemistry, MJP publishers Chennai, First Edition, 2006.

UNIT I : Text Book 1, 2

UNIT II : Text Book 1, 2

UNIT III : Text Book 1, 2

UNIT IV : Text Book 1, 2

UNIT V : Text Book 1, 2

REFERENCES:

1. B.K.Sharma, Industrial Chemistry, Goel Publishing House, 1995.
2. Jayashree Ghosh, Fundamental Concepts of Applied Chemistry, First Edition S.Chand Company Ltd – New Delhi, 2006.

**DOMESTIC CHEMISTRY AND QUALITY ASSURANCE
CERTIFICATE COURSE
FIRST YEAR
SEMESTER-II: CORE-II
DETERGENTS AND FUELS**

Course Code : 14CHCT2

Hours/Week : 150

Credit : 10

Objectives:

Max. Marks : 100

Internal Marks : 40

External Marks : 60

- *To get knowledge about the preparation and uses of soaps and detergents.*
- *To understand the chemistry of fuels.*
- *To help students develop in the safety in laboratory and home.*

UNIT-I

Soaps- Types of soaps- Manufacture of soaps- Kettle process and Mill's process- Quality analysis of soaps.

UNIT-II

Detergents – classification of detergents, anionic, cationic and non-ionic, amphoteric detergents- Advantages over soaps- Limitations of using detergent as cleaning agent- cleansing action of soaps and detergents.

UNIT-III

Fuels- Definition, Classification, Characteristic of a good fuel- Fuels for home – calorific value of gaseous fuels- Advantages of gaseous fuels and imperative studies- Health hazards of fuels.

UNIT-IV

Fossil fuels: Petrol and Kerosene – LPG – Calorific intensity – Flame temperature, Flash point, Octane number and Cetane number – leaded petrol.

UNIT-V

Fire prevention and protection in homes: Major causes of fire in home, fire prevention and fire fighting in home, methods of extinguishing fires, chemical fire – extinguishers – their relative merits and demerits, fire extinguishers for the home.

TEXT BOOKS:

1. B.K.Sharma, Industrial Chemistry, Goel Publishing House, 1995.
2. K.Bagavathi Sundari, Applied Chemistry, MJP publishers Chennai, First Edition, 2006.

UNIT I : Text Book 1, 2

UNIT II : Text Book 1, 2

UNIT III : Text Book 1, 2

UNIT IV : Text Book 1, 2

UNIT V : Text Book 1, 2

REFERENCES:

1. Thangammal Jacob, A textbook of applied chemistry, Mcmillan Company Ind. Ltd, 1979.
2. Jayashree Ghosh, Fundamental Concepts of Applied Chemistry, First Edition S.Chand Company Ltd – New Delhi, 2006.

**DOMESTIC CHEMISTRY AND QUALITY ASSURANCE
CERTIFICATE COURSE
FIRST YEAR
SEMESTER- I & II: CORE-III
COP PRACTICAL - I**

Course Code : 14CHCT3

Hours/Week : 150

Credit : 10

Max. Marks : 100

Internal Marks : 40

External Marks : 60

Objectives:

- ❖ *To develop self employment skills*
- ❖ *To become entrepreneur*

1. Preparation of Chalk
2. Preparation of Hair Shampoo
3. Preparation of Candles
4. Preparation of Rose water
5. Preparation of Lather shave cream
6. Preparation of Shaving foam liquid
7. Preparation of Room Spray
8. Preparation of Body lotion
9. Preparation of Hand lotion Moisturizer
10. Preparation of a hair dye
11. Determination of total permanent and temporary hardness of water using EDTA
12. Determination of active content (SLS, SLES, LABS) in a detergent
13. Determination of Flashpoint in lubricating oil

REFERENCE:

1. Thangammal Jacob, A Textbook of Applied Chemistry, McMillan Company Ind. Ltd, 1979.

DOMESTIC CHEMISTRY AND QUALITY ASSURANCE
DIPLOMA COURSE
SECOND YEAR
SEMESTER-III: CORE-I
FOOD AND DRUGS

Course Code : 14CHDM1

Hours/Week : 150

Credit : 10

Max. Marks : 100

Internal Marks : 40

External Marks : 60

Objectives:

- *To learn basic knowledge in food Chemistry.*
- *To know the nutritional values of food.*
- *To get awareness on the adulteration and sanitation.*
- *To study basic idea about in drugs.*

UNIT-I

Food science: Balanced diet – proteins – carbohydrates, fats, vitamins – sources – daily needs (quality) – deficiency and excess effects- Food adulteration and detection.

UNIT-II

Macro elements – Calcium, factors regulating serum calcium level, dietary sources of calcium, effects of calcium deficiency and excess of calcium in human- Phosphorus – Important functions, Dietary sources. Micro elements – Iodine – dietary sources, effect of iodine deficiency and excess effect of iodine.

UNIT-III

Toxins naturally present in foods: Toxic minerals and metals – fluoride, nitrate, lead and polycyclic aromatic hydrocarbons- Food additives-definition, compositions, general characteristics and their health hazards.

UNIT-IV

Quality Assurance-Nutritive values of Rice (Raw, Boiled), Pulses (Bengal gram, peas (green), vegetables-cabbage, carrot, brinjal, tomato) – Food standards – ISI and Agmark.

Saponification values of oils and fats -Water quality standards – ICMR, WHO, USPHS.

UNIT-V

Common drugs and medicines used in home- Preparation and uses of aspirin, paracetamol, gentan and tincture of iodine- Antiseptics-Preparation and uses of Boric acid and Dettol- Household disinfectants- laxatives- prevention and control of adverse reactions from drugs.

TEXT BOOKS:

1. Dr.M. Swaminathan –“Handbook of food and Nutrition” 5th Ed, Bangalore Printing and Publishing Co Ltd, Bangalore, 2007.
2. M.Raheena Begum – “A Text Book of Foods, Nutrition and Dietetics” - Sterling Publishers, Delhi, 2010.

UNIT I : Text Book 1, 2

UNIT II : Text Book 1, 2

UNIT III : Text Book 1, 2

UNIT IV : Text Book 1, 2

UNIT V : Text Book 1, 2

REFERENCES:

1. Morris B. Jacobs – “The Chemical Analysis of Foods and Food Products” – 3rd Ed, CBS Publishers and Distributors, New Delhi, 1993.
2. H.K.Chopra and P.S.Panesar – “Food Chemistry”, Narosa Publisher, 2010.

**DOMESTIC CHEMISTRY AND QUALITY ASSURANCE
DIPLOMA COURSE
SECOND YEAR
SEMESTER-IV: CORE -II
FERTILIZERS, GLASS AND DYES**

Course Code : 14CHDM2

Hours/Week : 150

Credit : 10

Max. Marks : 100

Internal Marks : 40

External Marks : 60

Objectives:

- *To learn the basic knowledge about fertilizers and pesticides.*
- *To study the preparation and uses of dyes.*
- *To get awareness on the health hazards of using pesticides and dyes.*

UNIT-I

Fertilizers – definition – classifications – Manufacture and uses of ammonium sulphate, urea super phosphate of lime and Triple super phosphate – Role of N, P and K in plants.

UNIT-II

Insecticides – types of insecticides – calcium arsenate – plant insecticides – Nicotine-Organic insecticides- Preparation, mode of action uses and hazards of BHC, DDT and Allithrin –

UNIT-III

Pesticides in common use- Classification of pesticides on the basis of mode of action and chemical nature- Formulation of pesticides- Chemistry of pesticides-Fumigants – Naphthalene and Ethylene dibromide.

UNIT-IV

Glass industries – Raw materials – types of glasses – Composition, properties, formulation and uses of optical glass, lead glass, soda glass, colored glasses and fiber glass.

UNIT-V

Dyes – classification – Textile dyes –Preparation, properties and uses of vat dye – indigo – Food dyes – Butter Yellow – Toxic effects of synthetic dyes.

TEXT BOOKS:

1. Thangammal Jacob, A Textbook of Applied Chemistry, McMillan Company Ind. Ltd, 1979.
2. K. Bagavathi Sundari, Applied Chemistry, MJP publishers Chennai, First Edition, 2006.
3. Arun Bahl and B.S. Bahl – “Text Book of Organic Chemistry”, 11th and 18th Ed., S. Chand, New Delhi, 2006.

UNIT I : Text Book 1, 2

UNIT II : Text Book 1, 2

UNIT III : Text Book 1, 2

UNIT IV : Text Book 1, 2

UNIT V : Text Book 3

REFERENCES:

1. B. K. Sharma, Industrial Chemistry, Goel Publishing House, 1995.
2. Jayashre Ghosh, Fundamental Concepts of Applied Chemistry, First Edition S.Chand Company Ltd – New Delhi, 2006.

**DOMESTIC CHEMISTRY AND QUALITY ASSURANCE
DIPLOMA COURSE
SECOND YEAR
SEMESTER- III & IV: CORE-III
COP PRACTICAL - II**

Course Code : 14CHDM3

Hours/Week : 150

Credit : 10

Max. Marks : 100

Internal Marks : 40

External Marks : 60

Objectives:

- ❖ *To develop self employment skills*
- ❖ *To become entrepreneur*

1. Detection of food adulterants in Coffee Power, Turmeric power and Tea dust.
2. Detection of food adulterants in Chilly Power and Asafetida.
3. Detection of food adulterants in oils.
4. Preparation of Aspirin
5. Preparation of Paracetamol
6. Preparation of Dettol
7. Preparation of a food dye
8. Preparation of calorific value of different food stuffs.
9. Estimation of Iron in branded dates.
10. Estimation of calcium in calcium tablet.
11. Estimation of pesticides in Fruits.

REFERENCE:

1. Thangammal Jacob, A Textbook of Applied Chemistry, McMillan Company Ind. Ltd, 1979.

DOMESTIC CHEMISTRY AND QUALITY ASSURANCE
ADVANCED DIPLOMA COURSE
THIRD YEAR
SEMESTER-V: CORE-I
VITAMINS AND POLYMERS

Course Code : 14CHAD1

Hours/Week : 150

Credit : 10

Max. Marks : 100

Internal Marks : 40

External Marks : 60

Objectives:

- *To learn the basic knowledge about vitamins.*
- *To study the preparation and uses of polymers.*
- *To learn the basic separation and purification methods.*

UNIT-I

Vitamins – Definition – General characteristics – classification – fat soluble vitamins – occurrence – properties – deficiency and human requirements of vitamin A, D, E and K.

UNIT-II

Water soluble Vitamins – Occurrence – properties – Deficiency and human requirements of Vitamins B1, B2, B6, B12 and Vitamin C.

UNIT-III

Polymers – definition – classification, Fibre and polyester – properties and uses – Plastics – types of plastics – polythene – PVC – Teflon – properties and uses – Hazards of plastics.

UNIT-IV

Natural and Synthetic rubber – Buna-S and N, Thiokol, Silicon rubber – their properties and uses – Rubber Cement – Thermocole laminates -An elementary idea.

UNIT-V

Tools and techniques in clinical laboratory

Chromatography: Paper, TLC, IEC

Centrifugation: Ultra Centrifugation

Testing of Blood: sugar, RBC, albumin and urea.

TEXT BOOKS:

1. Thangammal Jacob, A Textbook of Applied Chemistry, McMillan Company Ind. Ltd, 1979.
2. K. Bagavathi Sundari, Applied Chemistry, MJP publishers Chennai, First Edition, 2006.
3. R. Gopalan, P.S. Subramanian, K. Rangarajan – “Elements of Analytical Chemistry”, Sultan Chand and Sons, 1995.

UNIT I : Text Book 1, 2

UNIT II : Text Book 1, 2

UNIT III : Text Book 1, 2

UNIT IV : Text Book 1, 2

UNIT V : Text Book 3

REFERENCES:

1. B.K.Sharma, Industrial Chemistry, Goel Publishing House, 1995.
2. Jayashree Ghosh, Fundamental Concepts of Applied Chemistry, First Edition S.Chand Company Ltd – New Delhi, 2006.
3. B.K. Sharma - “Instrumental methods of Analysis”, Geol Publications,2000.

**DOMESTIC CHEMISTRY AND QUALITY ASSURANCE
ADVANCED DIPLOMA COURSE
THIRD YEAR
SEMESTER-VI: CORE – II
ADVANCED MEDICINES & PLANT MICRONUTRIENTS**

Course Code : 14CHAD2
Hours/Week : 150
Credit : 10

Max. Marks : 100
Internal Marks : 40
External Marks : 60

Objectives:

- *To impart the knowledge in the basic concept of drugs.*
- *To create the awareness about the diseases and their causes.*
- *To learn the importance of micronutrients in plant growth*

UNIT-I

Chemotherapy: Antibiotics, Antiseptics, Antipyretic, Analgesics, Antihistamines, Anesthetics, Sulpha drugs.

UNIT-II

General and local anesthetics – Definition – Structure and action of Halothane, Thiopental sodium Butamben – Muscle relaxants: Definition, classification, chemical structure and advisable doses of Gallamine, Mephenesin, Methocarbamol.

UNIT-III

Cardiovascular drugs - Definition – classification – structure and doses of Digitoxin, Hydralazine and Propranolol – steroid drugs in sports and gamed, birth control pills – chemical toxicology of above drugs.

UNIT-IV

Micronutrients of plants – definition – deficiency effects of important micronutrients like Fe, Mn, Zn, Mg, B & Mo – Toxic effect of Boron. Folier application of ZnSO₄, FeSO₄ on plants.

UNIT- V

Entrepreneur's skill- Manufacture of micronutrients mixture – liquid micronutrients – Effect of calcium salt on soils.

TEXT BOOKS:

1. Jayashree Ghose, Text book of Pharmaceutical Chemistry, 2nd Edition, 2003.
2. S. Lakshmi, Pharmaceutical Chemistry, 3rd Edition, Sulthan Chand and Sons, New Delhi, 2004.

UNIT I : Text Book 1, 2

UNIT II : Text Book 1, 2

UNIT III : Text Book 1, 2

UNIT IV : Text Book 1, 2

UNIT V : Text Book 1, 2

REFERENCES:

1. B.K.Sharma, Industrial Chemistry, Goel Publishing House, 1995.
2. Jayashree Ghosh, Fundamental Concepts of Applied Chemistry, First Edition S.Chand Company Ltd – New Delhi, 2006.
3. V. K. Ahluwalia and Madhu Chopra, Medicinal Chemistry, Ane books private Ltd. New Delhi, 1st Edition, 2008.

**DOMESTIC CHEMISTRY AND QUALITY ASSURANCE
ADVANCED DIPLOMA COURSE
THIRD YEAR
SEMESTER- V & VI: CORE-III
COP PRACTICAL - III**

Course Code : 14CHAD3

Hours/Week : 150

Credit : 10

Max. Marks : 100

Internal Marks : 40

External Marks : 60

Objectives:

- ❖ *To develop self employment skills*
- ❖ *To become entrepreneur*

1. Preparation of Poly Vinyl Alcohol Adhesive.
2. Detection of Sugar in a sample.
3. Detection of urea in a sample.
4. Identification of a compound by TLC.
5. Preparation of a food dye.
6. Preparation of an industrial dye.
7. Preparation of calorific value of different food stuffs.
8. Estimation of assay in Vitamin tablets.
9. Estimation of Zinc in food stuffs.
10. Estimation of Ascorbic acid.

REFERENCE:

1. Thangammal Jacob, A Textbook of Applied Chemistry, McMillan Company Ind. Ltd, 1979.