

## COURSE OBJECTIVES-CHEMISTRY

Name of the Course	Semester-V GE-Chemistry of Cosmetics, Food Processing, Drugs and Pharmaceuticals
Course Code	GE 535
COb1	Describe fundamentals of chemistry and the scientific basis of cosmetic formulation and the function of the active ingredients. Identify different cosmetic and perfumes. Analyze the importance and uses of them.
COb2	To acquire knowledge of emerging / alternative technologies applied to food processing. To enable a student to know the relative advantages / disadvantages over existing technologies. To illustrate the recent developments in the cereals science and technology. To explain modern processing techniques of cereals in food industries. To impart knowledge regarding various processed product lines in food industries. To describe various food additives and contaminants. To illustrate the functionality of food additives. To exemplify the limits of permissible additives in processed foods.
COb3	Explain the Drugs used for various infectious diseases caused by pathogens. Classify various drugs based on their nature, dosage forms etc. Identify the different routes to administer the drugs.
COb4	Define the different classes of drug and identify different types of drugs. Outline the function and impact of each class of drugs. Describe the structure activity relation of some important class of drugs. Explain mechanism of action of the drugs.

UNIT Chemistry of Cosmetics and Perfumes

15 h (1 h / w)

UNIT II-Food Processing and Food Adulterants

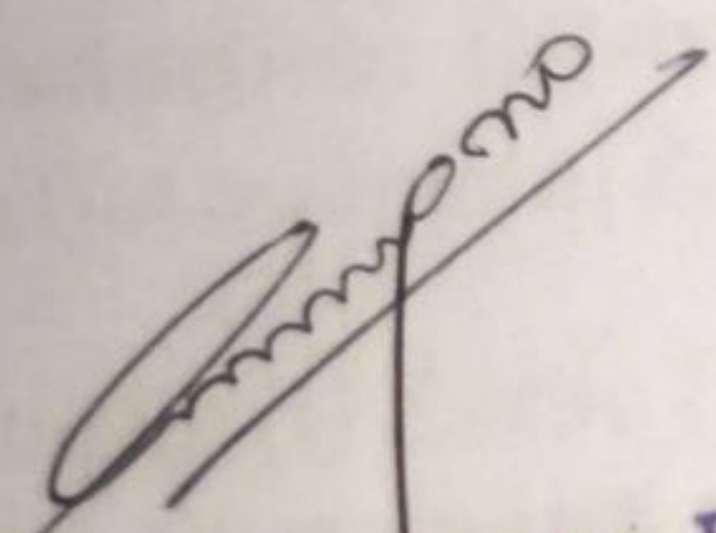
15 h (1 h / w)

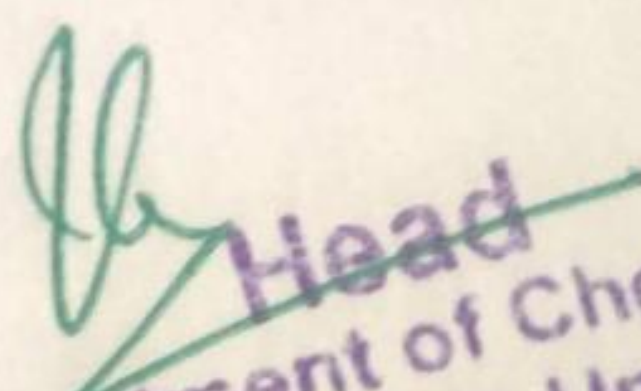
UNIT III- General Characteristics of Drugs

15 h (1 h / w)

UNIT IV – Classification of Drugs

15 h (1 h / w)

  
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**GENERIC ELECTIVE (GE) COURSE**  
**CHEMISTRY OF COSMETICS, FOOD PROCESSING, DRUGS AND**  
**PHARMACEUTICALS**

**UNIT I: Chemistry of Cosmetics and Perfumes**

(15h)

A general study including preparation and uses of the following: Hair dye, hair spray, shampoo, suntan lotions, lipsticks, talcum powder, nail enamel, creams (cold cream, vanishing and shaving creams), antiperspirants and artificial flavours. Essential oils and their importance in cosmetic industries with reference to Eugenol, Geraniol, sandalwood oil, eucalyptus, rose oil, 2-phenylethyl alcohol.

Demonstration experiments or illustration of experimental procedures through charts for the preparation of talcum powder, shampoo and vanishing cream. Chemistry and applications of deodorants and antiperspirant-Aluminium, Zinc, Boric acid, Chloride and Sulphide

**Unit II: Food Processing and food adulteration**

(15h)

**Food processing:** Introduction, methods for food processing, additives and preservatives. Food processing-impact on nutrition.

**Food adulteration:** Adulterants in some common food items and their identification: pulses, chilli powder, turmeric powder, milk, honey, spices, food grains and wheat flour, coffee powder, tea leaves, vegetable oil, ice creams and tomato sauce.

**Food Packaging:** Definition and function of packaging- Classification of packaging materials- different types of packaging materials such as glass, wood, metal, paper, plastic etc., advantages and disadvantages of each packaging material. Packaging materials and systems corrugated fiber board boxes, shrink bundles and reusable packages. Effect of packaging materials on nutritive values of food.

**Food labeling:** Introduction, need and importance

**Unit III: General Characteristics of Drugs**

(15h)

**Introduction:** Diseases- causes of diseases, Drugs -definition and sources. ADME of drugs (brief)-Absorption, distribution, drug mechanism (in liver), elimination (brief), Toxicity

Examples (i) Zintac (Ranitidine, antacid) (ii) Paracetamol (antipyretic) (iii) Benadryl (cough syrup). Characteristics of an ideal drug

**Nomenclature of Drugs:** Chemical name- generic name- trade name. Trade names for the given generic names trade name-(i) Aspirin (ii) Amoxicillin (ii) ciprofloxacin (iv) Paracetamol (v) Mebendazole

**Drug formulations:** Definition -need for conversion of drug into Pharmaceutical (drug formulations)- Additives -diluent, binders, lubricants, antioxidants, flavourants, colorants

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sweetness, coating agents. Classification of Drug formulations: Oral, parenterals and topical dosage forms. Advantages and disadvantages

(i) **Oral Dosage forms:** Tablets (Aspirin- analgesic; Ciprofloxacin –antibacterial). Capsules (Amoxicillin- antibiotic; Omeprazole- antacid). Syrups (B complex syrup; Benadryl- cough syrup)

(ii) **Parenteral (injection forms):** Propranolol (antihypertensive), Heparin (anticoagulant)

(iii) **Topical dosage forms:** Creams and Ointments

(iv) **Antiallergic:** Aclometasone (Aclovate), Betamethasone valerate (2%) Multiple purposes.

(v) **Anti-itching:** Doxepin (Zonalon), Antifungal: Miconazole (Dactarin, Neomicol), Ketoconazole (Nizoral Cream), Fluconazole, Anesthetic-Lidocaine (Lidocaine ointment) and Antiseptic: Boro plus Cream, for burns -Iodine ointment.

#### Unit IV-Classification of Drugs:

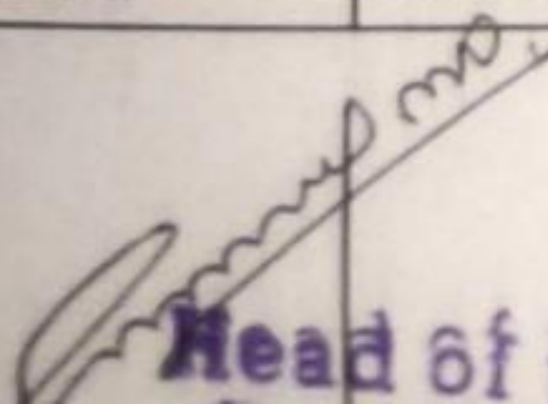
Classification of drugs based on therapeutic action - Chemotherapeutic agents, Pharmacodynamic agents and drugs acting on metabolic processes.

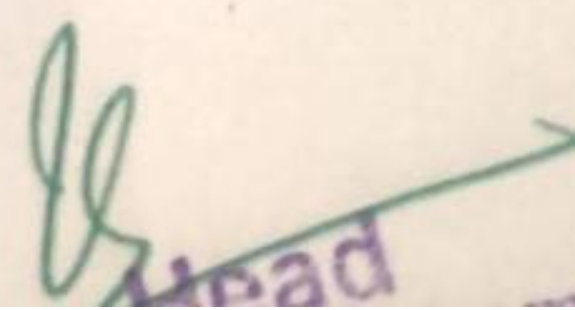
Brief explanation for the following:

- (i) **Chemotherapeutic agents:** Antimalarials, Chloroquine; Antibiotic- Amoxicillin; Antitubercular drugs –isoniazole; Antiprotozoals- metronidazole.
- (ii) **Pharmacodynamic agents:**
  - (a) Drugs acting on CNS: Diazepam( CNS depressant), General anesthetics (thiopental sodium), antipyretic and analgesic( ibuprofen)
  - (b) Drugs acting on PNS: local anesthetics (Benzocaine)
  - (c) Drugs acting on cardiovascular system: Metoprolol( antihypertensive agents) nefidipine (antianginal and antihypertensive agent)
  - (d) drugs acting on renal system: Diuretics (Acetazolamide)
- (iii) **Drugs acting on metabolic process:**
  - (a) Vitamins: Common name, source, deficiency, Vitamin A, B2, B6, C, D, E, K – remedy
  - (b) Hormones: Function( brief)- deficiency of hormones (Insulin, testosterone and Oesterone)

#### COURSE OUTCOMES-CHEMISTRY

Name of the Course		Semester-IV GE-Chemistry of Cosmetics, Food Processing, Drugs and Pharmaceuticals
Course Code		GE 535
CO1	Evaluate the side effects of using synthetic cosmetics and substitute with natural ingredients.	
CO2	Develop an appreciation about need of different emerging techniques used in food processing and preservation. Apply their knowledge on high pressure processing, pulsed electric processing, irradiation and hurdle technology in various food industries. To illustrate the functionality of food additives. To exemplify the limits of permissible additives in processed foods.	
CO3	Correlate between pharmacology of a disease and its mitigation or cure. To	

  
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	write the chemical synthesis of some drugs. Interpret the structural activity relationship of different class of drugs. Knowledge about the mechanism pathways of different class of medicinal compounds.
CO4	Apply the knowledge about the mechanism pathways of different class of medicinal compounds. Identify the different types of drugs used for different therapeutic action.

**Recommended Textbooks and Reference Books:**

1. Industrial chemistry, Volume -1, E.Stocchi, Ellis Horwood Ltd. UK.
  2. Engineering Chemistry ,P.C Jain, M.Jain, Dhanpat Rai & Sons, Delhi
  3. Industrial Chemistry ,Sharma, B.K &Gaur, H., Goel Publishing House, Meerut(1996)
  4. Food Processing and Impact on Nutrition. Rameen Devi ,Sc J Agric Vet Sci., Aug-  
Sepr 2015
  5. Perfumes, Cosmetics and Soaps, W A .Poucher,(1993)
  6. A first course in food analysis by A Y Sathe
  7. Food Science by N Potter, CBS Publishers
  8. Food chemistry, Lillian Hoogland Meyer, (2008 )
  9. A Handbook of food packaging by F.A. Paine and H.Y. Paine
  10. Fundamental concepts of applied chemistry J.C.Ghosh,S Chand and Co, Ltd, New Delhi
  11. Applied Chemistry K.Bhagavathi Sundar ,MJP Publishers
- Drugs by G L David Krupanandam, D. Vijay Prasad, K. Varaprasad Rao, K.L.N Redd

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