

SENGAMALA THAYAAR EDUCATIONAL TRUST

WOMEN'S COLLEGE (AUTONOMOUS)

(SILVER JUBILEE INSTITUTION) (Accredited by NAAC & An ISO 9001:2015 Certified Institution) (Ranked in NIRF-2024)

SUNDARAKKOTTAI, MANNARGUDI, THIRUVARUR (DT), TAMIL NADU, S.INDIA.

PG AND RESEARCH DEPARTMENT OF BIOCHEMISTRY VALUE ADDED COURSE FROM 2020 – 2026

S. No.	Year	Semester	Name of the Programmes	Beneficiaries
1.	2020-2021	-	Medical laboratory Techniques	UG Second year Students from Any Discipline
2.	2021-2022	Odd	First Aid and Emergency Care	UG Second year Students from Any Discipline
3.		Even	Herbal Product Development	PG First and Second year Students from Any Discipline
4.	2022-2023	Odd	Biochemical Changes in Lifestyle Disorder	UG Second year Students from Any Discipline
5.		Odd	Biochemistry in Daily life	PG Second year Students from Any Discipline
6.		Even	Know Your Medicine	UG final year Students from Any Discipline
7.		Even	Biochemical Changes in Lifestyle Disorder	UG first year Students from Any Discipline
8.	2023-2024	Odd	Phytochemistry and Biological Activities of Medicinal Plants	II UG Biochemistry
9.		Odd	Nutraceuticals	III UG Biochemistry
10.		Even	Detection Methods of Food Adulteration	I PG Biochemistry
11.		Even	Biochemistry of common disorders	PG Second year students from Any Discipline
12.		Even	Phytochemistry and Biological Activities of Medicinal Plants	I UG Biochemistry
13.	2024-2025	Odd	Herbal Product Development	II UG Biochemistry
14.		Odd	Nutraceuticals	III UG Biochemistry
15.		Odd	Herbs and Drug Action	II PG Biochemistry
16.		Even	Traditional Medicine	I UG Biochemistry
17.		Even	Know Your Medicine	I PG Biochemistry
18.	2025-2026	Odd	Herbal Cosmetics	II UG Biochemistry
19.		Odd	Biomedical Waste Management	III UG Biochemistry
20.		Even	Indian Knowledge System for Health and Wellness	II PG Biochemistry
21.		Even	Biochemistry for Society	I UG Biochemistry
22.		Even	Plant Therapeutics	I PG Biochemistry

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE

(AUTONOMOUS)

SUNDARAKKOTTAI, MANNARGUDI- 614016

DEPARTMENT OF BIOCHEMISTRY

VALUE ADDED COURSE

MEDICAL LABORATORY TECHNIQUES

Course Credit: 2

OBJECTIVES:

- To train the students to carry out laboratory investigations accurately and provide reliable reports to facilitate proper diagnosis and prognosis of diseases
- To obtain information about the health of a patient to aid in diagnosis, treatment, and prevention of disease.
- To produce good Lab Technologists, of Skills, Competence and Integrity.

UNIT-I: Biomolecules

Cell – structure, organelles and functions. Carbohydrates, Proteins, Lipids, Nucleic acids and Vitamins – Classification, Properties and Functions. Blood – Composition and functions.

UNIT-II: Anatomy

Cardiovascular System – Structure of heart and ECG. Digestive System – Anatomy, process of Digestion of Carbohydrates, Proteins and Lipids. Renal System –Anatomy and Physiology of the kidney, Formation of Urine. Nervous system –outline of the nervous system.

UNIT-III: Microbiology

General Introduction to Microbiology- Bacteria- Classification- systematic bacteriology, Morphology- Membrane- Composition, chemical nature- Physiology of bacteria. Nutritional Requirements for the growth of microbes.

UNIT- IV: Collection of biological samples

Collection of biological samples – Blood, Urine, Faeces. Blood Grouping. Estimation of Haemoglobin. Sterilisation techniques. Staining techniques- Simple staining, Gram staining, Acid fast staining, Capsule staining and Spore staining. Preparation of culture media, Pour Plate and spread plate methods.

UNIT –V: Organ Function Test & Histopathology

Diagnosis of liver function, renal function and gastric functions. Disorder of clotting mechanism. Histopathology – Introduction, tissue processing and embedding, section cutting and problem encountered, staining, decalcification, frozen section, cytology, fine needle aspiration cytology.

Total Lecture Hours: 30

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(7 Hours)

(7 Hours)

(**5 Hours**) c acids and

Course Code: 20VABC1

COURSE OUTCOME:

The students will be able to

- 1. Explain the functions of cell and structure and functions of Biomolecules
- 2. Describe about the Human Anatomy
- 3. Acquire basic knowledge of nature and structure of microorganism
- 4. Collect and store the clinical specimens of patients
- 5. Gain knowledge about the functions of various organs and histopathology

TEXT BOOK(S):

- 1. Satyanarayana U and Chakrapani U. 2020. Biochemistry, 5th Updated edition, Elsevier Publishers, India.
- 2. Deb AC. 2016. Fundamentals of Biochemistry. 7th Edition, NCBA Publishers, New Delhi.
- 3. Jain JL, Sunjay Jain and Nitin Jain. 2018. Fundamentals of Biochemistry. Updated Edition. 2020. S.Chand Publishers, New Delhi.
- 4. Jain AK. 2019. Textbook of Physiology with Free QA Physiology (2 Volume Set), 8th Edition. Arya Medical (APC) Publishers, New Delhi.
- 5. Vasudevan DM. 2018. Biochemistry, 9th Edition, Jaypee Brothers Medical Publishers, Chennai, Tamil Nadu.

REFERENCE BOOK(S):

- 1. Stryer I. 1988. Biochemistry, 2nd Edition, W.H. Freeman & Co., Publishers, New York.
- 2. Lehninger AL, Nelson DL and Cox MM. 2020. Principles of Biochemistry, 8th Edition, WH Freeman Publishers, New York, USA.
- 3. Voet D. and Voet JG. 1990. Biochemistry, 4th Edition, John Wiley & Sons Inc., Publishers, New York, USA.
- 4. Prescott, L.M., Harley, J.P. and Klein, D.A. 2002. Microbiology: Food and Industrial Microbiology. 5th Edition, McGraw-Hill, Boston.
- 5. Microbiology/ Michael J. Pelczar, Jr., E.C.S. Chan, Noel R. Krieg, with the assistance of Merna Foss Pelczar, 1986.5th ed. McGraw-Hill New York .

E-RESOURCES:

https://www.pdfdrive.com/biochemistry-books.html http://www1.biologie.uni-hamburg.de/b-online /library/ biology 107/ bi107vc/ fa99/ terry/ sugars.html

HEAD PG and Research Department of Biochemistry Sengamala Thayaar Educational Trust Women's College (Autonomous) Sundarakkottai, Mannargudi - 614 016



SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE (AUTONOMOUS),

SUNDARAKKOTTAI, MANNARGUDI- 614016

(For the Candidates admitted in the academic year 2021 - 2022)

DEPARTMENT OF BIOCHEMISTRY

B.Sc., BIOCHEMISTRY

VALUE ADDED COURSE

First Aid and Emergency Care

Total Ins. Hrs. : 30

Course Code : 21VABC1

OBJECTIVES

- To understand the scope of First Aid and role of First Aid •
- To describe the life saving measures for an unconscious casualty
- To develop skill in giving First Aid treatment in emergencies

Unit -1: Becoming a First Aider

What is a first aider?, How to prepare yourself, Protection from infection, Dealing with a casualty, Requesting help, The use of medication, Remember your own needs. Action at emergency, Traffic accidents, Fires, Electrical incidents and Water incidents.

Unit-II: Assessing a Casualty Aider

Assessing the sick or injured, Mechanisms of injury, Primary survey, Secondary survey, Head- to-toe examination, Monitoring vital signs. Breathing and circulation, Life-saving priorities, Unconscious adult and Unconscious child.

Unit- III: Effects of heat and cold

The skin, Assessing a burn, Severe burns and scalds, Minor burns and scalds, Burns to the airway, Electrical burn, Chemical burn, Chemical burn to the eye, Flash burn to the eye, Incapacitant spray exposure, Dehydration, Sunburn.

Unit-IV: Respiratory problems

The respiratory system, Hypoxia, Airway obstruction, Choking adult, Choking child, Hanging and strangulation, Inhalation of fumes, Drowning, Hyperventilation, Asthma, Croup, Penetratingchest wound. Wounds and circulation the heart and blood vessels.

Unit-V: Techniques and Equipment removing clothing

Removing headgear, Casualty handling, First aid materials, Dressings, Cold compresses, Principles of bandaging, Roller bandages, Tubular gauze bandages, square knots, hand and foot cover, Arm sling, Elevation sling, improvised slings.

COURSE OUTCOME

The Students will be able to,

- 1. Understand the scope of First Aid and role of First Aid.
- 2. Describe the life saving measures for an unconscious casualty.
- 3. Describe First Aid process for the effects of heat and cold.
- 4. Explain First Aid management for respiratory problems.
- 5. Describe First Aid measures for wounds and circulation problems.

(6 Hours)

(6 Hours)

(6 Hours)

(6 Hours)

(6 Hours)

TEXT BOOK(S)

- 1. American college of emergency physicians, First Aid manual, 2014. 5th edition, DorlingKindersley, London.
- 2. Clement, Text book on First Aid & Emergency Nursing, 2013. 1st edition, JP Brothers.
- 3. Gupta L.C. Manual of First Aid, 2017. Jaypee Brothers Medical Publishers, India.

REFERENCE BOOK(S)

- 1. Philip Jevon, Emergency care and First Aid for Nurses, A practical guide, 2007. Churchill Living Stone.
- 2. John Ambulance, St. Andrew's Ambulance association and the British red cross society, FirstAid manual, 9th edition, Dorling Kindersley, London.
- 3. Harris N, First Aid and Emergency Care, 2022 2nd edition, Aitbs Publishers, India.

E-RESOURCES

- 1. https://www.ncbi.nlm.nih.gov/books/NBK222964/
- 2. https://www.webmd.com/first-aid/default.htm
- 3. https://www.indianredcross.org/publications/FA-manual.pdf
- 4. <u>https://kuiyem.ku.edu.tr/wp-content/uploads/2016/12/American-College-of-Emergency-Physicians-ACEP-First-Aid-Manual.pdf</u>

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V. Anthe **Course Coordinator**

PG & Research Department of Biochemistry Sengamala Thayaar Educational Trust Women's College (Autonomous) Sundarakkottai, Mannargudi - 614 016.

HEAD PG and Research Department of Biochemistry Sengamala Thayaar Educational Trust Women's College (Autonomous) Sundarakkottai, Mannargudi - 614 016

Head of the Department



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DEPARTMENT OF BIOCHEMISTRY

VALUE ADDED COURSE

Herbal Product Development

Total Ins. Hrs.: 30

Course Code : 21VABC2

OBJECTIVES

- To know the modern extraction techniques, characterization and identification of the herbal drugs.
- To understand the preparation and development of herbal formulation.

UNIT-I: General Methods of Processing of Herbs

(6 Hours) Definition, sources, identification and authentification of herbs. Different methods of processing of herbs like collection, harvesting, garbling, packing and storage conditions. Methods of drying Natural and artificial drying methods with their merits and demerits.

UNIT-II: Methods of Preparation of Extracts

Principles of extraction and selection of suitable extraction method. Different methods of extraction including maceration, percolation, hot continuous extraction, supercritical fluid extraction.

UNIT-III: Standardization of Herbal Raw materials and Extracts

Standardization of herbal raw materials including Pharmacognostical, physical, chemical and biological methods with examples. Standardization of herbal extracts, physical, chemical and spectral analysis.

UNIT-IV: Selection of herbal ingredients

Different dosage forms of herbal drugs. Evaluation of different dosage forms. Stability studies of herbal formulations. Good practices in collection of plant materials.

UNIT-V: Herbal Cosmetics

Cosmetics preparations: Incorporating the herbal extracts in various cosmetic formulations like Skin care preparations (Creams and Lotions), Hair care preparations (Hair oils and Hair shampoos) and Beautifying preparations.(Lipsticks, Face powders and Nail polish).

COURSE OUTCOME

The Students will be able to,

- 1. Understand the processing of herbs
- 2. Acquire knowledge on procedures of preparation of extracts

(6 Hours)

(6 Hours)

(6 Hours)

(6 Hours)

- 3. Describe various methods on standardization of Herbs
- 4. Explain the selection of herbal ingredients
- 5. Illustrate various key ingredients and basic science to develop cosmetics

TEXT BOOK(S)

- 1. Choudhary, R.D. Herbal drug industry, Ist edition, 1996, eastern publisher, New Delhi:
- 2. Kumar, N.C. An Introduction to Medical botany and Pharmacognosy. 1993, Emkay Publications, New Delhi
- 3. Pulok K. Mukarjee, Quality control of herbal drugs, Ist edition, Business horizons Pharmaceutical publisher, New Delhi, 2002

REFERENCE BOOK(S)

- 1. Robert Verpoorte, Pulok K. Mukharjee.GMP for Botanicals Regulatory and Quality issues on Phytomedicine Business horizons, 2003, New Delhi, First edition.
- 2. Kokate C.K., Purohit, Gokhlae. Text book of Pharmacognosy, 1996, 4th edition, Nirali Prakashan.
- 3. .Rao, A.P. Herbs that heal. 1999, Diamond Pocket Books (P) Ltd., New Delhi.

E-RESOURCES

- 1. <u>https://www.routledge.com/Herbal-Product-Development-Formulation-and-Applications/Sharma-Keservani-Gautam/p/book/9781774638958</u>
- 2. <u>https://www.researchgate.net/publication/347216284_Herbal_Food_Product_Development_a</u> <u>nd_Characteristics</u>
- 3. https://www.hindawi.com/journals/ecam/2019/4935786/
- 4. <u>https://www.researchgate.net/publication/235944029_Herbal_Cosmetics_Used_for_Skin_an_d_Hair</u>

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Head of the Department

HEAD PG and Research Department of Biochemistry Sengamala Thayaar Educational Trust Women's College (Autonomous) Sundarakkottai, Mannargudi - 614 016

Course Coordinator

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SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE (AUTONOMOUS)



SUNDARAKKOTTAI, MANNARGUDI- 614016

(For the Candidates admitted in the academic year 2022 – 2023) DEPARTMENT OF BIOCHEMISTRY

Semester: I-VAC-I: Biochemical Changes in Lifestyle disorders

Course Credit: 2* Course Code: 22BCVA1

Unit-I: Human Physiology

Body fluids and their composition. Definition and differentiation of disease and disorder, types and causes. Analysis of various biochemical parameters in body fluids and specific tissues during disorders, diseases and forensics

Unit-II: Diseases and Disorders

Aetiology; classification; causative factors; incidence, symptoms and biochemical aspects and markers for- identification, monitoring, prevention and interventions. Renal disease: Nephrotic syndrome, Acute and Chronic renal failure- diagnostic procedures and dietary management. Dialysis, medical and nutrition therapy.

Unit-III: Gastrointestinal diseases/disorders

Gastro-oesophageal reflux and esophagitis, Gastritis and Peptic ulcer. Characteristics of and comparison of the stomach and duodenal ulcers. Diagnostic tests for malabsorption, sprue and tropical sprue, Crohn's disease, diarrhoea, constipation, ulcerative colitis, diverticular disease and colon cancer.

Unit-IV: Cancer and HIV/AIDS

Biochemistry of carcinogenesis, types, stages of cancer, diagnosis and existing medicines. Biochemistry of HIV infection, ART and social issues.

Unit-V: Diagnostic Techniques

Collection and storage of biological samples for clinical use. Commonly used tests for diagnosis of various diseases and their interpretation. Blood analysis: Total blood count including ESR, Total serum proteins. Blood glucose (GTT), serum lipid fraction–cholesterol, triglyceride, LDL and HDL, blood urea, and serum calcium. Urine: Creatinine, Glucose and protein. Enzymes: SGPT, SGOT and isoenzymes as markers in various disorders and diseases.

COURSE OUTCOME

The students should be able to,

- 1. Understand the common concepts of Biochemistry like bodyfluids and its components
- 2. Assess the hypo/hyper immunological reaction
- 3. Acquire knowledge on the basic concepts of health and disease/disorder
- 4. Demonstrate the connection between knowledge of anatomy and physiology and realworld situations
- 5. Critically evaluate on healthy lifestyle decisions and homeostatic imbalances

TEXT BOOK(S)

- 1. Chatterjee M N and Rana shinde, 2011. Textbook of Medical Biochemistry, 8th edition,Jaypee Publishers
- 2. David E. Metzler, 2001. Biochemistry- The Chemical Reactions of Living Cells, 2nd edition, Academic Press
- 3. Mohanty and Basu, 2002. Fundamentals of Practical Biochemistry, BI Publications
- 4. Eric E. Conn, Paul K. Stumpf, George Breuning, Roy H. Doi , 2009. Outlines of Biochemistry, 5th edition, John-Wiley and sons

REFERENCE BOOK(S)

- 1. Carl A. Burtis, Edward. Ashwood and David E. Bruns. 2011. Tietz Textbook of ClinicalChemistry and Molecular Diagnostics, 5th edition, Saunders Publishers, United States.
- Kaplan A, Jack KE, Opheim B, Toivola B and Lyon AW. 1995. Clinical Chemistry Interpretation and techniques, 4 th edition, Williams and Wilkins Publishers, United States.
- 3. Simon Langley-Evans. 2015. Nutrition, health and disease: A lifespan approach, 2ndedition, John Wiley & Sons Publishers, New Jersey, United States.
- 4. Vibha Rani, Umesh and Yadav. 2018. Functional Food and Human Health, 1st edition,

Springer Publishers, New York, USA.

5. William S. Hoffman. 1964. The Biochemistry of Clinical Medicine, 3rdedition, YearBookMedical Publishers, Chennai, Tamil Nadu.

E RESOURCES

- 1. https://www.slideshare.net/ImranIqbal7/metabolic-disorders-2019
- 2. https://www.slideshare.net/veerundh/veerendhar-nadh-38767743
- 3. https://drive.google.com/file/d/10C4EYN0Sv2LPI9ZzhoV-
- 4. https://drive.google.com/file/d/1UyLEp6iXyKrqXuVwh-
- 5. https://drive.google.om/file/d/1tghNWPyuqPiqK1Rl11ZzUrFwcoMiuoMa/

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE (AUTONOMOUS) SUNDARAKKOTTAI, MANNARGUDI- 614016 (For the Candidates admitted in the academic year 2022 – 2023) DEPARTMENT OF BIOCHEMISTRY M.Sc., BIOCHEMISTRY

Semester: I -VAC-I – Biochemistry in Daily life Course Credit: 2* Course Code: 22PBCVA11

UNIT –I : Introduction to Biochemistry

Biochemistry: Definition of life, different forms of life, microorganisms to human beings. Building blocks of life. Introduction to the common macro and micro constituents of unicellular and multi cellular organisms.

UNIT –II: Food and Nutrition

Importance of food for existence of life. Modes of nutrition in life forms –Comparable and contrasting features. Functional foods: Definition, development of functional foods, benefits and sources of functional foods in Indian diet. Effects of processing conditions and storage. Development of nutraceutical and functional foods.

UNIT –III: Enzymes

Introduction and essentiality to life forms. Use of enzyme in beverages- fruit juices, beer, wine, and distilleries; dairy, baking, oils and fats, plantation products, animal products. Malting and germination of grains – process, characteristics, nutritional benefits and uses. Use of enzymes in Domestic use products like detergents, Textiles and Leather industry.

UNIT –IV: Human Health and Disease

Nutrition (Health), definition, classification, food and nonfood sources. Nutraceuticals; use of nutraceuticals in traditional health sciences. Role of omega-3 fattyacids, carotenoids, dietary fiber, phytoestrogens; glucosinolates;organo-sulphur compounds in health and disease (prevention and control).

UNIT – IV: Prebiotics and Probiotics

Prebiotics and probiotics: Mechanics and usefulness of probiotics and prebiotics in gastrointestinal health and otherbenefits. Beneficiary microbes; prebiotic ingredients in foods; types of prebiotics and their effects on gut microbes.

COURSE OUTCOME

The students should be able to,

- 1. Acquire basic knowledge about Biochemistry
- 2. Understand the basic concepts in food, health, Disease
- 3. Demonstrate the usefulness and concepts of Prebiotics & Probiotics

- 4. Describe the types and application of enzymes.
- 5. Evaluate on food processing & fortification

TEXT BOOK(S)

- 1. Birn AE., Pillay Y & amp; Holtz T. 2009. Textbook of international health: Global health in adynamic world, 3 rd edition, Oxford University Press Publishers, England.
- 2. Chakrabarty, Kaveri and Chakrabarty AS. 2019. Textbook of Nutrition in Health and Disease, 1 st edition, Springer Publishers, New York, USA.
- 3. Chatterjea MN and Rana Shinde. 2007. Textbook of Medical Biochemistry, 7th edition, Jaypee Brothers Publishers, Chennai, Tamil Nadu.
- 4. Krishna Das KV. 2013. Clinical Medicine (A Textbook of Clinical Methods and Laboratory Investigations), 4 th edition, Jaypee Brothers Medical publishers, Chennai, Tamil Nadu.
- Seyed Mohammad Nabavi, Grazia Donofrio and Seyed Fazel Nabavi. 2020. Nutrients and Nutraceuticals for Active & amp; Healthy Ageing, 1st edition, Springer Publishers, NewYork, USA.
- 6. Palmer T. and Bonner P. 2007. Enzymes: Biochemistry, Biotechnology, Clinical Chemistry, 2nd Edition, Horwood Publishers, United Kingdom.

REFERENCE BOOK(S)

- 1. Carl A. Burtis, Edward. Ashwood and David E. Bruns. 2011. Tietz Textbook of Clinical Chemistry and Molecular Diagnostics, 5th edition, Saunders Publishers, United States.
- 2. Kaplan A, Jack KE, Opheim B, Toivola B and Lyon AW. 1995. Clinical Chemistry Interpretation and techniques, 4th edition, Williams and Wilkins Publishers, United States.
- 3. Simon Langley-Evans. 2015. Nutrition, health and disease: A lifespan approach, 2ndedition, John Wiley & amp; Sons Publishers, New Jersey, United States.
- 4. Vibha Rani, Umesh and Yadav. 2018. Functional Food and Human Health, 1st edition, Springer Publishers, New York, USA.
- 5. William S. Hoffman. 1964. The Biochemistry of Clinical Medicine, 3rdedition, YearBook Medical Publishers, Chennai, Tamil Nadu.

E RESOURCES

- 1. <u>https://www.researchgate.net/publication/327247966_Chapter06_Carbohydrates-</u> <u>III_Regulation_of_Blood_Glucose_Diabetes_Mellitus</u>
- 2. https://www.slideshare.net/ImranIqbal7/metabolic-disorders-2019
- 3. https://www.slideshare.net/veerundh/veerendhar-nadh-38767743
- 4. https://drive.google.com/file/d/10C4EYN0Sv2LPI9ZzhoV-
- 5. https://drive.google.com/file/d/1UyLEp6iXyKrqXuVwh-
- 6. <u>https://drive.google.om/file/d/1tghNWPyuqPiqK1Rl11ZzUrFwcoMiuoMa/</u>
- 7. https://pharmacologyonline.silae.it/files/newsletter/2009/vol3/44.Jagdish.pdf

SENGAMALATHAYAAREDUCATIONALTRUSTWOMEN'SCOLLEGE (AUTONOMOUS)



SUNDARAKKOTTAI, MANNARGUDI- 614016

(For the Candidates admitted in the academic year 2022 – 2023) DEPARTMENT OF BIOCHEMISTRY

Semester: II-VAC-II: Know Your Medicine

Course Credit: 2* Course Code: 22BCVA2

Unit-I: Know your Medicine

Brief description of some common Dosage forms of Medicines: Tablets, Capsules, Liquids, Suspensions, Injectable, Non-oral dosage forms etc. Components of a Medicine (Dosage form). Generic and Branded medicines. Dosage strength and How to read the label of Medicines. Idea of Batch, Manufacturing and Expiry Dates.

Unit-II: Using Medicines

Buying and storing medicines at home. Concept of Dosage frequencies and its variation. Reasons for before or after food dose. Do's and Don'ts with special dosage forms (enteric or extended release etc). Do's and Don'ts on Medicines for chronic conditions such as Diabetes, Hypertension etc

Unit-III: Drugs or Medicine Discovery

Some historical perspectives of drug discovery examples such as Aspirin, Penicillin, Quinine, etc. Natural drugs to Modern drugs. Safety evaluation and Efficacy Evaluation etc. Some modern advances such as Gene Therapy, Stem cell therapy etc.

Unit-IV Herbal, Ayurvedic and Siddha Medicines

Basic concepts. Common Traditional Remedies and Illustrative examples of popular plant drugs used in the above systems of medicines, their therapeutic constituents and uses.

Unit-V: Standards, Quality and Regulation of Medicines

Basic concepts of quality with respect to medicinal products and how it is ensured. Outline of structure and functions of Drug Control and other relevant Bodies such as NPPA, Scope and purpose of Drugs and Cosmetic Act etc.

COURSE OUTCOMES

The students should be able to,

- 1. Explain the various dosage forms, components, categories and labelling of Medicines.
- 2. Gain awareness about buying, using, storing and side effects of Medicines.
- 3. Understand about various stages of drug development and about current therapies.
- 4. Appreciate the concepts of traditional medicines, standards for medicines and regulation of medicines.
- 5. Extract, evaluate and label the medicines.

TEXT BOOK(S)

- 1. Allen, 2018, Ansel's Pharmaceutical Dosage Forms And Drug Delivery System, Wolters Kluwer India Pvt. Ltd.
- 2. Mohantha G P, 2017, Textbook of Clinical Research, PharmaMed Press/BSP Books
- 3. Wallis T E, 2005, Textbook Of Pharmacognosy, CBS
- 4. Indian Pharmacoepia

REFERENCE BOOK(S)

- 1. Faroogi AA and Sreeramu B S, 2004. Cultivation of medicinal and aromatic crops. Revised edition, Universities Press (India) Private Limited, Hyderabad
- 2. Harbone JB, 1998. Phytochemical Methods: A guide to modern techniques of plant analysis. 3rd Edn, Springer (India) Private Limited, New Delhi.
- 3. WHO, 2002. Quality control methods for medicinal plant materials, World Health Organization, Geneva, A.I.T.B.S., Publishers and Distributors, New Delhi.
- 4. Halliwall B and Gutteridge J M. 1985. Free radicals in Biology and medicine. Oxford university press.

E RESOURCES

- 1. Central Drugs Standard Control Organization (CDSCO): https://cdsco.gov.in/opencms/opencms/en/Home/
- 2. https://pharmacologyonline.silae.it/files/newsletter/2009/vol3/44.Jagdish.pdf

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE (AUTONOMOUS),

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DEPARTMENT OF BIOCHEMISTRY **B.Sc., BIOCHEMISTRY**

VALUE ADDED COURSE

VAC I-Phytochemistry and Biological Activities of Medicinal Plants Total Ins. Hrs. : 30 **Course Code : U23BCVA1**

Objectives

To learn about phytochemistry and biological activities of medicinal plants

UNIT-I

Extraction – purification of bio-active compounds from plants – cold & hot extraction – Soxhlet extraction – crude extracts purification by various solvents.

UNIT-II

Isolation of bioactive compounds – chromatographic techniques – thin layer chromatography – liquid chromatography – HPLC and UPLC.

UNIT-III

Structural analysis of bioactive compounds – IR spectroscopy – Mass spectrometry – NMR spectroscopy.

UNIT-IV

Herbal medicine – History of herbal medicine – different types of herbal medicine – Ayurveda, Siddha and Unani – Pharmacological action – clinical research and traditional uses of Indian medicinal plants – Eclipta alba, Gymnema sylvestre, Ocimum sanctum, Curcuma longa.

UNIT-V

Phytopharmaceuticals and their health benefits – anthocyanins, carotenoids, lycopene, isoflavones, polyphenols, omega 3 - fatty acids, biological effects of resveratrol.

Course Outcomes

After completion of the course, student are

- 1. Understand the concepts of phytochemistry
- 2. Able to appreciate the medicinal values of plants
- 3. Know the various techniques involved in the phytochemistry

(7 Hours)

(7 Hours)

(5 Hours)

(6 Hours)

(5 Hours)

4. Familiarize the bio-active components present in the plants

Text books:

- 1. Godte V.M. 2000. Ayurvedic pharmacology and therapeutic uses of medicinal plants, Bharathiya Vidya Bhavan, Mumbai.
- 2. Grewal, R.C. 2000. Medicinal Plants, Campus Books International, New Delhi.
- 3. Harbone, J.B. 1998. Phytochemical Methods A guide to modern techniques of plant analysis, 3rd Edition. Springer (India) Private Limited, New Delhi.
- 4. Majumdar, A. 2000. Home remedies in Ayurveda, Amar Granth Publications, New Delhi.
- 5. Silverstein, R.M. and F. X. Webster.1998. Spectroscopic identification of organic compounds, John-Wiley.
- 6. Willard, H.H., L. L. Merrit and J.A. Dean, 1987. Instrumental Methods of analysis.
- 7. Wadsworth Publishing, Belmont, California.



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DEPARTMENT OF BIOCHEMISTRY

M.Sc., BIOCHEMISTRY

VALUE ADDED COURSE

VAC-I - Detection Methods of Food Adulteration

Total Ins. Hrs. : 30

Course Code : P23BCVA1

Objectives:

- To exemplify different food adulterants
- To elucidate the adulterants in food products

UNIT-I Testing adulteration of Milk

Test A: Adulteration of Milk Physical Tests: Detergent Test Filter Test Flow. Test B: Chemical Tests: Clot on boiling test. Test for starch in Milk Test for cane sugar in Milk Test for Buffaloes Milk in Cow's Milk Test for added colours in Milk Test for skim milk power in milk Detect the presence of added carbonates and bicarbonates in milk Test for soda in milk. Test for glucose.

UNIT-II Adulteration of Ghee

Test for vegetable fat: Nitric acid test Soda ash test Valenta test Test for added alkali. Baudovin test. Analysis of butter:Test for Dalda in butter. Adulteration of Khoa: Test for starch in Khoa. Adulteration of Paneer: Presence of starch in paneer.

UNIT-III Testing adulteration of oils and fats

Test for sesame oil in other oils Halphen test for cotton seed oil Hexa bromide test for linseed oil Test for added mineral oil Test for added castor oil Detection of argemone oil in other oils Test for rancidity in oils Kries test for testing quality of oil.

UNIT-IV Testing adulteration of Spices

Extraction of flavour. Coriander power: Test for starch &horse dung power. Chilli powder. Test for oil soluble dyes, powdered bran, saw dust and brick powder. Turmeric Powder: Test for metanil yellow and lead chromate polish. Cloves: Test for exhausted cloves. Curry powder: Test for metallic colours

UNIT V Testing adulteration in seeds

Poppy seeds: Test for Amaranths seeds. Sajeera: Test for sand, stones and other seeds. Mustard seeds: Visual examination. Pepper: Test for papaya seeds. Saffron: Detection of maize cob tendrils. Cumin seeds; Cinnamon: plant bark.

(5 Hours)

(5 Hours) test for

(7 Hours)

(7 Hours)

(6 Hours)

COURSE OUTCOME

After successful completion of the course, students will be able to:

- Understand the adulteration of common foods and their adverse impact on health
- Comprehend certain skills of detecting adulteration of common foods.
- Extend their knowledge to other kinds of adulteration, detection and remedies.

Reference Books:

Rapid detection of food adulterants and contaminants Theory and practice. Shyam Narayan Jha. 2015



SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE (AUTONOMOUS),

SUNDARAKKOTTAI, MANNARGUDI- 614016 (For the Candidates admitted in the academic year 2021 – 2022)

DEPARTMENT OF BIOCHEMISTRY

B.Sc., BIOCHEMISTRY

VALUE ADDED COURSE VAC II- Nutraceuticals

Total Ins. Hrs. : 30

Course Code : U23BCVA2

Objectives:

The main objectives of this course are to:

- To provide Basic knowledge about nutraceuticals
- To understand the health benefits of nutraceuticals
- To apply basic techniques for the production of nutraceuticals
- To give exposure to basic analytical instruments relevant to nutraceutical industries

UNIT-I

Theory: Introduction to nutraceuticals, Classification and sources of nutraceuticals. Dietary supplements, fortified foods and functional foods.

UNIT-II

Theory: Introduction to Phytonutracutical. Classification - Plant secondary metabolites, Extraction and purification of Phytonutracuticals.

UNIT-III

Theory: Probiotics, prebiotics, and synbiotics. Health benefits Probiotics- principle, mechanism, production technology. Role of nutraceuticals in management of health and diseases.

UNIT-IV

Extraction and quantification of polyphenols, flavonoids, saponins and alkaloids. 3 Hours

UNIT-V

Isolation and Identification of probiotic bacteria, In-vitro characterization of probiotics

Text Book(s)

- 1. L. Rapport and B. Lockwood (2002) Nutraceuticals, 2nd Edition, Pharmaceutical Press.
- 2. M. Maffei (Ed.) (2003) Dietary Supplements of Plant Origin, Taylor & Francis 3 Nutraceuticals by L. Rapport and B. Lockwood, Pharmaceutical Press.

(7 Hours)

(5 Hours)

(7 Hours)

(5 Hours)

(6 Hours)

Reference Book(s)

- 1. Israel Goldberg (Ed.) (1999) Functional foods, designer foods, pharma foods, Nutraceuticals, Aspen publishers Inc., USA
- 2. Shahidi and Weerasinghe (Ed.) (2004) Nutraceutical beverages Chemistry, Nutrition and health Effects, American Chemical Society
- 3. L. Rapport and B. Lockwood (2002) Nutraceuticals, 2nd Edition, Pharmaceutical Press.
- 4. M. Maffei (Ed.) (2003) Dietary Supplements of Plant Origin, Taylor & Francis

E-Resources

- 1. Food is Medicine An introduction to Nutraceuticals https://www.researchgate.net/publication/283076818
- 2. Phytopharmaceutical applications of Nutraceuticals Functional foods https://www.researchgate.net/publication/308116783_Phytopharmaceutical_applic ations_ of_Nutraceuticals_Functional_foods
- 3. Nutraceuticals, Nutritional Therapy, Phytonutrients, and Phytotherapy for Improvement of Human Health: A Perspective on Plant Biotechnology Application iteseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.321.9494&rep=rep1&type=pdf
- 4. Effects of Probiotics, Prebiotics, and Synbiotics on Human Health <u>https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5622781/pdf/nutrients-09-01021.pdf</u>
- 5. Production of High quality Probiotics by fermentation https://www.researchgate.net/publication/280057164_Production_of_High_quality Probio tics_ by_fermentation



SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE (AUTONOMOUS),

SUNDARAKKOTTAI, MANNARGUDI- 614016 (For the Candidates admitted in the academic year 2021 – 2022)

DEPARTMENT OF BIOCHEMISTRY M.Sc., BIOCHEMISTRY

VALUE ADDED COURSE

VAC-I - Detection Methods of Food Adulteration

Total Ins. Hrs. : 30

Course Code : P23BCVA1

Objectives:

- To exemplify different food adulterants
- To elucidate the adulterants in food products

UNIT-I Testing adulteration of Milk

Test A: Adulteration of Milk Physical Tests: Detergent Test Filter Test Flow. Test B: Chemical Tests: Clot on boiling test. Test for starch in Milk Test for cane sugar in Milk Test for Buffaloes Milk in Cow's Milk Test for added colours in Milk Test for skim milk power in milk Detect the presence of added carbonates and bicarbonates in milk Test for soda in milk. Test for glucose.

UNIT-II Adulteration of Ghee

Test for vegetable fat: Nitric acid test Soda ash test Valenta test Test for added alkali. Baudovin test. Analysis of butter:Test for Dalda in butter. Adulteration of Khoa: Test for starch in Khoa. Adulteration of Paneer: Presence of starch in paneer.

UNIT-III Testing adulteration of oils and fats

Test for sesame oil in other oils Halphen test for cotton seed oil Hexa bromide test for linseed oil Test for added mineral oil Test for added castor oil Detection of argemone oil in other oils Test for rancidity in oils Kries test for testing quality of oil.

UNIT-IV Testing adulteration of Spices

Extraction of flavour. Coriander power: Test for starch &horse dung power. Chilli powder. Test for oil soluble dyes, powdered bran, saw dust and brick powder. Turmeric Powder: Test for metanil yellow and lead chromate polish. Cloves: Test for exhausted cloves. Curry powder: Test for metallic colours

UNIT V Testing adulteration in seeds

Poppy seeds: Test for Amaranths seeds. Sajeera: Test for sand, stones and other seeds. Mustard seeds: Visual examination. Pepper: Test for papaya seeds. Saffron: Detection of maize cob tendrils. Cumin seeds; Cinnamon: plant bark.

(5 Hours)

(5 Hours)

(7 Hours)

(7 Hours)

(6 Hours)

COURSE OUTCOME

After successful completion of the course, students will be able to:

- Understand the adulteration of common foods and their adverse impact on health
- Comprehend certain skills of detecting adulteration of common foods.
- Extend their knowledge to other kinds of adulteration, detection and remedies.

Reference Books:

Rapid detection of food adulterants and contaminants Theory and practice. Shyam Narayan Jha. 2015

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE



(AUTONOMOUS) SUNDARAKKOTTAI, MANNARGUDI- 614016 (For the Candidates admitted in the academic year 2024 – 2025 onwards)

DEPARTMENT OF BIOCHEMISTRY

B.Sc., BIOCHEMISTRY

Ins. Hours: 30

VAC I: Traditional Medicine

Course Code: U24BCVA21

OBJECTIVES

- To impart knowledge of Herbal medicine as the basic objective of Education
- To develop a scientific attitude to make students open minded, critical and curious
- To make them able to identify medicinal plants (family/genus-level)

UNIT-I: Introduction

Definition of Herbal drug, Importance of Herbal therapies, Herbal verses conventional drugs, Safety in herbal drugs.

UNIT-II: Phytoconstituents

Herbs used as nutraceuticals and healing agents; Isolation, identification tests and estimation methods such as HPLC, HPTLC.

UNIT-III: Application of Herbal Medicines

Making and using herbal medicines for common ailments like cold, skin infections and Diarrhea.

UNIT-IV: Quality Control of Herbal Medicines

Quality Control and Quality Assurance of Herbal ingredients as per W.H.O.Guidelines, Ash value, Extractable matter and Pesticide residues.

UNIT-V: Evaluation of Herbal Extracts & Herbal Drug Processing (06 Hours)

Qualitative and Quantitative estimation of active principles from standardized extract by HPTLC.

Total Lecture Hours- 30

COURSE OUTCOME

The students will be able to,

- Develop skill in practical work, experiments, equipment's and laboratory use along 1. with collection and interpretation of herbal products and their utilization.
- 2. Make aware of natural resources and environment and the importance of conserving the same.
- Demonstrate understanding of the importance of medicinal plants among 3. different cultures through clear, logical writing.
- 4. Cultures approach plant use in different ways and how plants and people interact.

(05 Hours)

(07 Hours)

(07 Hours)

(05 Hours)

5. Apply basic ethnobotanical techniques to the study of a specific cultural use of medicinal plants.

TEXT BOOK(S)

- 1. Kokate CK and Purohit DP. Textbook of Pharmacognosy, Nirali Prakashan, Pune
- 2. Staba EJ. Plant Tissue Culture as a source of Bio-Medicinals
- 3. Trease GE. and Evans WE., Pharmacognosy Baillere Tindall, Eastbourne
- 4. Tyler VE, Brady LR and Robbers JE. Pharmacognosy Len & Febiger, Philadelphia
- 5. Wallis TE. Pharmacognosy, CBS Publisher, New Delhi

REFERENCE BOOK(S)

- 1. William C. Evans, 2009. Pharmacognosy. 16th edition. Saunders Limited, USA.
- 2. Indian Herbal Pharmacopeia, 2002. Indian Drug Manufacturers Association, India
- 3. Quality Control methods for medicinal plant material, 1998. WHO, Geneva
- 4. Pulak Km Mukherjee, 2019. Quality control of herbal drugs. 1st edition, Elsevier, USA.
- 5. Michael Meguffin, Christopher Hobbs, 1997. Botanical safety handbook. Herbal products association, USA.

E-RESOURCES

- 1. https://www.pdfdrive.com/biochemistry-books.html
- 2. https://www.ncbi.nlm.nih.gov/books/NBK92773/
- 3. <u>https://depts.washington.edu/pse406/notes.htm</u>
- 4. <u>https://www.intechopen.com/books/herbal-medicine/introductory-chapter-introduction-to-herbal-medicine</u>
- 5. <u>https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6806606/</u>

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE



(AUTONOMOUS) SUNDARAKKOTTAI, MANNARGUDI- 614016 (For the Candidates admitted in the academic year 2023 – 2024) DEPARTMENT OF BIOCHEMISTRY

B.Sc., BIOCHEMISTRY

VAC II: Herbal Product Development

Ins. Hrs: 30

Course Code: U23BCVA32

OBJECTIVES

- To know the modern extraction techniques, characterization and identification of the herbal drugs.
- To understand the preparation and development of herbal formulation.

UNIT-I: General Methods of Processing of Herbs

Definition, sources, identification and authentification of herbs. Different methods of processing of herbs like collection, harvesting, garbling, packing and storage conditions. Methods of drying Natural and artificial drying methods with their merits and demerits.

UNIT-II: Methods of Preparation of Extracts

Principles of extraction and selection of suitable extraction method. Different methods of extraction including maceration, percolation, hot continuous extraction, supercritical fluid extraction.

UNIT- III: Standardization of Herbal Raw materials and Extracts (06 Hours)

Standardization of herbal raw materials including Pharmacognostical, physical, chemical and biological methods with examples. Standardization of herbal extracts, physical, chemical and spectral analysis.

UNIT- IV: Selection of herbal ingredients

Different dosage forms of herbal drugs. Evaluation of different dosage forms. Stability studies ofherbal formulations. Good practices in collection of plant materials.

UNIT- V: Herbal Cosmetics

Cosmetics preparations: Incorporating the herbal extracts in various cosmetic formulations like Skin care preparations (Creams and Lotions), Hair care preparations (Hair oils and Hair shampoos) and Beautifying preparations.(Lipsticks, Face powders and Nail polish).

Total Lecture Hours-30

(06 Hours)

(06 Hours)

(06 Hours)

(06 Hours)

COURSE OUTCOME

The Students are able to,

- 1. Understand the processing of herbs
- 2. Acquire knowledge on procedures of preparation of extracts
- 3. Describe various methods on standardization of Herbs
- 4. Explain the selection of herbal ingredients
- 5. Illustrate various key ingredients and basic science to develop cosmetics

TEXT BOOK(S)

- 1. Choudhary, R.D. Herbal drug industry, Ist edition, 1996, eastern publisher, New Delhi:
- 2. Kumar, N.C. An Introduction to Medical botany and Pharmacognosy. 1993, Emkay Publications, New Delhi
- 3. Pulok K. Mukarjee, Quality control of herbal drugs, Ist edition, Business horizonsPharmaceutical publisher, New Delhi, 2002

REFERENCE BOOK(S)

- 1. Robert Verpoorte, Pulok K. Mukharjee.GMP for Botanicals Regulatory and Qualityissues on Phytomedicine Business horizons, 2003, New Delhi, First edition.
- 2. Kokate C.K., Purohit, Gokhlae. Text book of Pharmacognosy, 1996, 4th edition, Nirali Prakashan.
- 3. Rao, A.P. Herbs that heal. 1999, Diamond Pocket Books (P) Ltd., New Delhi.

E-RESOURCES

- 1. <u>https://www.routledge.com/Herbal-Product-Development-</u> <u>Formulation-and-</u> <u>Applications/Sharma-Keservani-</u> <u>Gautam/p/book/9781774638958</u>
- 2. <u>https://www.researchgate.net/publication/347216284_Herbal_Food_Product_Deve</u> <u>lopment_a nd_Characteristics</u>
- 3. https://www.hindawi.com/journals/ecam/2019/4935786/
- 4. <u>https://www.researchgate.net/publication/235944029_Herbal_Cosmetics_Used_for_Skin_an_d_Hair</u>

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE



(AUTONOMOUS)

SUNDARAKKOTTAI, MANNARGUDI- 614016

(For the Candidates admitted in the academic year 2022 – 2023 onwards)

DEPARTMENT OF BIOCHEMISTRY

B.Sc., BIOCHEMISTRY

VAC III: Nutraceuticals

Ins. Hours: 30

Course Code: 23BCVA3

OBJECTIVES

- To provide Basic knowledge about nutraceuticals
- To understand the health benefits of nutraceuticals
- To apply basic techniques for the production of nutraceuticals

UNIT-I: Over view of nutraceuticals

Introduction to Nutraceuticals - Historical Perspective, Classification, Sources, Scope and Future Prospects.

UNIT- II: Over view of Phytonutracuticals

Introduction to Phytonutracutical. Classification - Plant secondary metabolites, Extraction and purification of Phytonutracuticals.

UNIT-III: Probiotics, prebiotics and synbiotics

Health benefits Probiotics, prebiotics and synbiotics - principle, mechanism, production technology. Role of nutraceuticals in management of health and diseases.

UNIT-IV: Extraction and quantification of Nutraceuticals

Extraction and quantification of polyphenols, flavonoids, saponins and alkaloids.

UNIT-V: Effects of nutraceuticals on other sciences

Relation of Nutraceutical with other Sciences: Medicine, Human Physiology, Genetics, Food Technology.

Total Lecture Hours-30

COURSE OUTCOME

The students are able to.

- 1. Know about basic definition, classification of nutraceuticals
- Learn source, chemistry and uses of several natural phytonutraceuticals 2.
- 3. Understand the effect of probiotics, prebiotics and synbiotics to maintain healthy life
- 4. Gain knowledge on extraction and quantification of Nutraceuticals
- Acquire knowledge of nutraceuticals on other sciences 5.

(05 Hours)

(06 Hours)

(06 Hours)

(06 Hours)

(07 Hours)

TEXT BOOK(S)

- 1. Birn AE., Pillay Y & Holtz T. 2009. Textbook of international health: Global health in a dynamic world, 3rd edition, Oxford University Press Publishers, England.
- Krishna Das KV. 2013. Clinical Medicine (A Textbook of Clinical Methods and Laboratory Investigations), 4th edition, Jaypee Brothers Medical publishers, Chennai, Tamil Nadu.
- Seyed Mohammad Nabavi, Grazia D'Onofrio and Seyed Fazel Nabavi. 2020. Nutrients and Nutraceuticals for Active & Healthy Ageing, 1st edition, Springer Publishers, New York, USA.

REFERENCE BOOK(S)

- 1. Vibha Rani, Umesh and Yadav. 2018. Functional Food and Human Health, 1st edition, Springer Publishers, New York, USA.
- 2. William S. Hoffman. 1964. The Biochemistry of Clinical Medicine, 3rd edition, Year Book Medical Publishers, Chennai, Tamil Nadu.

E RESOURCES

- 1. https://egyankosh.ac.in/bitstream/123456789/99636/1/Unit-2.pdf
- 2. <u>https://mis.alagappauniversity.ac.in/siteAdmin/dde-admin/uploads/2/PG_M.Sc._Home%20Science%20%E2%80%93%20Nutrition%20and%20Dietetics_365%2022_Functional%20Foods%20and%20Nutraceuticals_3572.pdf</u>
- 3. <u>https://www.slideshare.net/munnaijoy/probiotics-prebiotics-and-synbiotics</u>

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE



(AUTONOMOUS) SUNDARAKKOTTAI, MANNARGUDI-614016 (For the Candidates admitted in the academic year 2024–2025)

DEPARTMENT OFBIOCHEMISTRY M.Sc., BIOCHEMISTRY

VAC I: Know Your Medicine

Ins. Hours: 30

Course Code: P24BCVA21

OBJECTIVES

- To explain the various dosage forms, components, categories and labeling of Medicines
- To gain awareness about buying, using, storing and side effects of Medicines.
- To understand about various stages of drug development and about current therapies.
- To know the concepts of traditional medicines, standards for medicines and regulation of medicines.

Unit-I: Know your Medicine

Brief description of some common Dosage forms of Medicines: Tablets, Capsules, Liquids, Suspensions, Injectable, Non-oral dosage forms etc. Components of a Medicine (Dosage form). Generic and Branded medicines. Dosage strength and How to read the label of Medicines. Idea of Batch, Manufacturing and Expiry Dates.

Unit-II: Using Medicines

Buying and storing medicines at home. Concept of Dosage frequencies and its variation. Reasons for before or after food dose. Do's and Don'ts with special dosage forms (enteric or extended release etc). Do's and Don'ts on Medicines for chronic conditions such as Diabetes, Hypertension etc

Unit-III: Drugs or Medicine Discovery

Some historical perspectives of drug discovery examples such as Aspirin, Penicillin, Quinine, etc. Natural drugs to Modern drugs. Safety evaluation and Efficacy Evaluation etc. Some modern advances such as Gene Therapy, Stem cell therapy etc.

Unit-IV: Herbal, Ayurvedic and Siddha Medicines

Basic concepts. Common Traditional Remedies and Illustrative examples of popular plant drugs used in the above systems of medicines, their therapeutic constituents and uses.

Unit-V: Standards, Quality and Regulation of Medicines

Basic concepts of quality with respect to medicinal products and how it is ensured. Outline of structure and functions of Drug Control and other relevant Bodies such as NPPA, Scope and purpose of Drugs and Cosmetic Act etc.

(06 Hours)

(06 Hours)

(06 Hours)

(06 Hours)

(06 Hours)

COURSE OUTCOMES

The students are able to,

- 1. Explain the various dosage forms, components, categories and labeling of Medicines.
- 2. Gain awareness about buying, using, storing and side effects of Medicines.
- 3. Understand about various stages of drug development and about current therapies.
- 4. Appreciate the concepts of traditional medicines, standards for medicines and regulation of medicines.
- 5. Extract, evaluate and label the medicines.

TEXT BOOK(S)

- 1. Allen, 2018, Ansel's Pharmaceutical Dosage Forms and Drug Delivery System, Wolters Kluwer India Pvt. Ltd.
- 2. Mohantha GP,2017, Textbook of Clinical Research, Pharma Med Press/ BSP Books
- 3. Wallis TE, 2005, Textbook of Pharmacognosy, CBS Indian Pharmacoepia

REFERENCE BOOK(S)

- 1. Faroogi AA, and Sreeramu BS, 2004. Cultivation of medicinal and aromatic crops. Revised edition, Universities Press (India) Private Limited, Hyderabad
- 2. Harbone JB, 1998. Phytochemical Methods: A guide to modern techniques of plant analysis. 3rdEdn, Springer (India) Private Limited, New Delhi.
- 3. WHO, 2002.Quality control methods for medicinal plant materials, World Health Organization, Geneva, A.I.T.B.S., Publishers and Distributors, New Delhi.
- 4. Halliwall B and Gutteridge J M. 1985. Free radicals in Biology and medicine. Oxford university press.

E-RESOURCES

- 1. https://cdsco.gov.in/opencms/opencms/en/Home/
- 2. https://pharmacologyonline.silae.it/files/newsletter/2009/vol3/44.Jagdish.pdf

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE



(AUTONOMOUS) SUNDARAKKOTTAI, MANNARGUDI-614016 (For the Candidates admitted in the academic year 2023–2024)

DEPARTMENT OFBIOCHEMISTRY M.Sc., BIOCHEMISTRY

VAC II: Herbs and Drug Action

Ins. Hrs.: 30

Course Code: P23BCVA32

OBJECTIVES

- To know the history of herbal medicine
- To gain knowledge in allergy and allergens
- To know the basic concepts on CNS drugs
- To help in correlating between cardiovascular and respiratory diseases and their drugs
- To understand the mechanism of action of gastro intestinal and urogenital drugs

UNIT- I: History of herbal medicine

History of herbal medicine - Indian system of medicine - Siddha, Ayurvedha and Unani Systems.

UNIT- II: Allergens

(05 Hours)

(06 Hours)

(06 Hours)

Types – sources – active principles – Chemical nature – Cell modifiers – Lectins – mutagens, teratogens – Allergic reactions with known examples.

UNIT- III: Drugs acting on brain and nervous system

Drugs used for Rheumatic arthritis – Psychoactive drugs – Depressants, Stimulants, hallucinogens – sources, effects, basic mechanism of action.

UNIT –IV: Drugs for Cardiovascular and Respiratory diseases (06 Hours)

Cardiovascular drugs of plant origins –anticoagulants, antihypertensive drugs – basic mechanism of action. Pulmonary / respiratory disorders – asthma – bronchitis – common cold – allergy – Remedy from plants.

UNIT- V: Drugs for Gastro intestinal and urinogenital disorders (07 Hours)

Herbal drugs used for Gastro intestinal disorders -nausea, vomiting, peptic ulcer, gastritis, constipation,Urogenetal drugs–Plant drugs used for UTI, kidney stones, Amenorrhea, dysmenorrhea, PCOS, Infertility. Antiinflammatory drugs – Cardiospermum. Anticancer drugs – Catharanthus roseus.

Total Lecture Hours-30

COURSE OUTCOME

The students are able to,

- 1. Understand the concepts of Indian system of medicine
- 2. Acquaint with the mode of actions of allergens
- 3. Correlate the CNS disorders and drugs
- 4. Assess the role of drugs in cardio vascular and respiratory diseases
- 5. Learn about the drugs used for urogenital disorders and anti inflammatory drugs

TEXT BOOK(S)

- 1. Kumar, N.C., An Introduction to Medical botany and Pharmacognosy. Emkay Publications, New Delhi. 1993
- 2. Rao, A.P. Herbs that heal. Diamond Pocket Books(P) Ltd., New Delhi, 1999
- 3. D.C. Pal & S.K. Jain Naya Prakash. Tribal medicine –206, Bidhan Sarani, Calcutta , 1998
- 4. Jain, 2001 Medicinal plants. National Book Trust, New Delhi
- 5. Agarwal, 1985. Drug plants in India, Kalyani Publishers, Ludhiyana

REFERENCE BOOK(S)

- 1. Gokhale S.M., M.C.K.Kokate and A.P. Purohit Pharmagonosy, Nirali Prakashan
- 2. Bhattacharya, S.K. 1988 Hand book of medicinal plants. Pointer publishers, jaipur.
- 3. Acharya Vipul Rao- Herbs-that heal Diamond Pocket Books Pvt. Ltd., New Delhi
- 4. An introduction to Medicinal Botany and Pharmacognosy -N.C.Kumar, Emkay
- 5. Publica Modicina Plants (2004-V) K.R. Kirtikar and B. D. Basu 1975.

E RESOURCES

- 1. https://www.jiwaji.edu/pdf/ecourse/pharmaceutical/Indian%20system%20of%20medicine.pdf
- 2. https://www.niehs.nih.gov/health/topics/agents/allergens
- 3. https://childrenswi.org/medical-care/genetics-and-genomics-program/medical-genetics/teratogens
- 4. <u>https://www.researchgate.net/publication/353972383_Plants_Based_Herbal_Drugs_for_Cardiovas</u> <u>cular_Diseases</u>
- 5. <u>https://www.researchgate.net/publication/318852059_Herbal_Remedies_for_Respiratory_Disease</u> <u>s_among_the_Natives_of_Madhya_Pradesh_India</u>
- 6. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7365888/
- 7. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5297587/

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE (Autonomous)



SUNDARAKKOTTAI, MANNARGUDI- 614016

(For the Candidates admitted in the academic year 2025 – 2026)

DEPARTMENT OF BIOCHEMISTRY

B.Sc., BIOCHEMISTRY

Semester: II-VAC-I: Biochemistry for Society Course Code: U25BCVA21

OBJECTIVES

- To introduce the role of biomolecules in maintaining human health and preventing diseases.
- To explore biochemical applications in food security, public health, industry, and agriculture.
- To promote awareness of environmental sustainability through biochemical processes and innovations.

UNIT I: Biomolecules and Human Health

Sources, Daily requirements and deficiencies of Biomolecules: Carbohydrates, Proteins, Lipids, Vitamins and Minerals.

UNIT II: Biochemistry and Public Health

Biochemical basis of common diseases -Diabetes, Cancer and Cardiovascular Disease.

UNIT III: Biochemistry and Food Security

Biofortification and nutrition enhancement, Food adulteration and detection methods, Functional foods and nutraceuticals.

UNIT IV: Industrial and Agricultural Biochemistry

Enzymes in industrial applications, Biochemical tools in agriculture- Biofertilizers and Biopesticides.

UNIT V: Environmental Biochemistry

Biochemical cycles -carbon, nitrogen, phosphorus, Bioremediation and pollution control, Climate change and biochemical implications.

Total Lecture Hours-30

COURSE OUTCOME

The students are able to

- 1. Understand the roles of essential biomolecules and their impact on human health.
- 2. Explain the biochemical mechanisms behind prevalent public health issues.
- 3. Evaluate the role of biochemistry in food security.
- 4. Demonstrate knowledge of biochemical tools and enzyme applications in industrial processes and sustainable agriculture.
- 5. Analyze environmental challenges using biochemical principles.

Ins. Hrs: 30

(6 Hours)

(6 Hours)

(6 Hours)

(5 Hours)

(7 Hours)

TEXT BOOK(S)

- 1. Satyanarayana, U., & Chakrapani, U. (2021). Biochemistry (6th ed.). Elsevier.
- 2. Puri, D. (2022). Textbook of Medical Biochemistry (5th ed.). Elsevier.
- 3. Litwack, G. (2021). Human Biochemistry (2nd ed.). Elsevier.
- 4. Nelson, D. L., Cox, M. M., & Hoskins, A. (2021). *Lehninger Principles of Biochemistry* (8th ed.). Macmillan Learning.
- Berg, J. M., Tymoczko, J. L., Gatto, G. J., Jr., & Stryer, L. (2019). *Biochemistry* (9th ed.). W. H. Freeman and Company.

REFERENCE BOOK(S)

- 1. Garrett, R. H., & Grisham, C. M. (2024). Biochemistry (7th ed.). Cengage Learning.
- 2. Heilman, D., Woski, S., Voet, D., & Pratt, C. W. (2024). *Fundamentals of Biochemistry* (6th ed.). John Wiley & Sons.
- 3. Albanesi, J. P. (2021). *Integrative Human Biochemistry: A Textbook for Medical Biochemistry* (2nd ed.). Springer Nature Switzerland AG.
- 4. Indumati, V., & Lakshmi, S. (2023). *Integrated Textbook of Biochemistry* (2nd ed.). Paras Medical Publisher.
- 5. Vasudevan, D. M., Sreekumari, S., & Kannan, V. (2024). *Textbook of Biochemistry for Medical Students* (10th ed.). Jaypee Brothers Medical Publishers.

E-RESOURCES

- 1. https://www.ncbi.nlm.nih.gov/books/
- 2. https://ocw.mit.edu/courses/biology/7-05-general-biochemistry-spring-2014/
- 3. <u>https://www.khanacademy.org/science/biology/biology-library</u>
- 4. <u>https://www.ncbi.nlm.nih.gov/pmc/</u>
- 5. https://www.coursera.org/browse/life-sciences/biochemistry

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE (Autonomous)



SUNDARAKKOTTAI, MANNARGUDI- 614016

(For the Candidates admitted in the academic year 2024 – 2025)

DEPARTMENT OF BIOCHEMISTRY

B.Sc., BIOCHEMISTRY

Semester: III-VAC-II: Herbal Cosmetics

Course Code: U24BCVA32

OBJECTIVES

Ins. Hrs: 30

- To provide foundational knowledge.
- To develop skills in the formulation, preparation, and evaluation.
- To familiarize students with regulatory, safety, and marketing aspects.

Unit 1: Introduction to Herbal Cosmetics

Definition and scope of herbal cosmetics, Advantages of herbal over synthetic cosmetics, Historical background and traditional systems (Ayurveda, Unani), Basic concepts of skin and hair physiology related to cosmetics

Unit 2: Common Herbs Used in Cosmetics

Classification of herbs used in skincare and haircare, Botanical name, parts used, and active constituents, Pharmacological actions of herbs like Aloe vera, Neem, Turmeric, Sandalwood, Tulsi, Amla, etc., Extraction methods (cold pressing, distillation, maceration)

Unit 3: Formulation and Preparation of Herbal Cosmetics

General principles of cosmetic formulation, Preparation of herbal face wash, face packs, shampoos, conditioners, soaps, and creams, Use of natural excipients, preservatives, and colorants, Quality control tests for raw materials and finished products

Unit 4: Safety, Efficacy, and Evaluation of Herbal Cosmetics (6 Hours)

Standardization and stability testing of herbal cosmetics, Microbial contamination and preservation techniques, Safety evaluation methods (skin irritation, sensitization tests), Efficacy evaluation and consumer acceptability studies

Unit 5: Regulatory Aspects and Marketing of Herbal Cosmetics (6 Hours)

Regulatory guidelines in India (AYUSH, CDSCO, BIS standards), Labeling and packaging requirements, Intellectual property rights and patenting of herbal formulations, Market trends and opportunities in the herbal cosmetic industry

Total Lecture Hours-30

(6 Hours)

(6 Hours)

(6 Hours)

COURSE OUTCOME

The students are able to

- 1. Understand the basic concepts, scope, and traditional systems related to herbal cosmetics.
- 2. Identify and describe commonly used herbs in cosmetic formulations, along with their therapeutic benefits and active constituents.
- 3. Demonstrate the ability to formulate and prepare various herbal cosmetic products such as creams, shampoos, and face packs.
- 4. Evaluate the quality, safety, and efficacy of herbal cosmetics using standard protocols and testing methods.
- 5. Apply knowledge of regulatory frameworks and market trends to develop and promote herbal cosmetic products ethically and legally.

TEXTBOOKS BOOK(S)

- 1. Kapoor, L. D. (2001). *Handbook of Ayurvedic medicinal plants: Herbal reference library*. CRC Press.
- 2. Kokate, C. K., Purohit, A. P., & Gokhale, S. B. (2014). *Pharmacognosy* (49th ed.). Nirali Prakashan.
- 3. Panda, H. (2004). *Herbal cosmetics handbook: Formulations, manufacturing & marketing*. Asia Pacific Business Press.
- 4. Sharma, P. V. (2005). *Dravyaguna Vijnana (Materia Medica-Vegetable Drugs)* (Vol. 1). Chaukhambha Bharati Academy.
- 5. Trease, G. E., & Evans, W. C. (2009). *Pharmacognosy* (16th ed.). Saunders.

REFERENCE BOOK(S)

- 1. Barel, A. O., Paye, M., & Maibach, H. I. (Eds.). (2014). *Handbook of cosmetic science and technology* (4th ed.). CRC Press.
- 2. Dureja, H., Kaushik, D., Gupta, M., Kumar, V., & Lather, V. (2008). *Cosmetic technology* (Eastern Economy ed.). Ane Books Pvt. Ltd.
- 3. Mukherjee, P. K. (2002). *Quality control of herbal drugs: An approach to evaluation of botanicals*. Business Horizons.
- 4. Rangari, V. D. (2012). Pharmacognosy and phytochemistry (Vol. 2). Career Publications.
- 5. Saraf, S., & Saraf, S. (2020). *Herbal cosmetics and cosmeceuticals*. CBS Publishers & Distributors.

E-RESOURCES

- 1. https://apps.who.int/iris/handle/10665/43034
- 2. https://main.ayush.gov.in
- 3. <u>https://www.fda.gov/cosmetics/cosmetics-laws-regulations/it-cosmetic-drug-or-both-or-it-soap</u>
- 4. https://www.ema.europa.eu/en/human-regulatory/herbal-medicinal-products
- 5. <u>https://www.nccih.nih.gov/health/herbs-at-a-glance</u>

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE (Autonomous)



SUNDARAKKOTTAI, MANNARGUDI- 614016

(For the Candidates admitted in the academic year 2023–2024)

DEPARTMENT OF BIOCHEMISTRY

B.Sc., BIOCHEMISTRY

Semester: V-VAC-III: Biomedical Waste Management

Course Code: U23BCVA53

OBJECTIVES

- To provide a comprehensive understanding of the types, sources, and hazards associated with biomedical waste.
- To familiarize students with national and international regulations governing biomedical waste management and ensure awareness of legal compliance.
- To equip students with practical knowledge of segregation, handling, treatment, and disposal techniques to promote safe and sustainable biomedical waste management practices.

Unit 1: Introduction to Biomedical Waste (6 Hours)

Definition, sources, types, and characteristics of biomedical waste.

Unit 2: Biomedical Waste Management Rules and Legal Framework (6 Hours) National and international regulations, compliance, and institutional responsibilities.

Unit 3: Segregation, Collection, and Storage of Biomedical Waste (6 Hours) Waste categorization, color coding, storage guidelines, and labeling protocols.

Unit 4: Treatment and Disposal Technologies

Incineration, autoclaving, microwaving, chemical disinfection, and landfilling.

Unit 5: Health Hazards, Occupational Safety, and Awareness (6 Hours)

Risks to healthcare workers, safety protocols, training, and public awareness strategies.

Total Lecture Hours-30

COURSE OUTCOME

The students are able to

- Identify and categorize different types of biomedical waste generated in healthcare and 1. related sectors.
- 2. Demonstrate knowledge of the Biomedical Waste Management Rules and apply regulatory guidelines in real-world scenarios.
- Implement proper waste segregation, labeling, and storage techniques in accordance with 3. standard color coding systems.
- 4. Evaluate and select appropriate treatment and disposal methods for various categories of biomedical waste.
- Apply safety measures to minimize health risks and promote awareness among healthcare 5. personnel and the public.

Ins. Hrs: 30

(6 Hours)

REFERENCE BOOK(S)

- 1. Khanna, D. G. K. (2010). Manual on hospital waste management. Sagar Publications.
- 2. Ministry of Environment, Forest and Climate Change, Government of India. (2016). *Handbook on biomedical waste management rules*. MoEFCC.
- 3. Pandey, S., & Pandey, V. (2015). Biomedical waste management. Centrum Press.
- 4. Rao, C. S. (2018). *Environmental pollution control engineering*. New Age International Publishers.
- 5. World Health Organization. (2014). *Safe management of wastes from health-care activities* (2nd ed.). WHO Press.

TEXT BOOK(S)

- 1. Sharon, M. (2024). Manual on hospital waste management. Himalaya Publishing House.
- 2. Lawrence, S. (2023). *Biomedical waste management: Issues and concerns*. APH Publishing Corporation.
- 3. Latha, S., & Sridevi, V. (2022). *Biomedical waste management in hospitals*. New Age International Publishers.
- 4. Sharma, Y. K. (2024). Hospital waste management. Kanishka Publishers.
- 5. Mahajan, S. P. (2020). *Pollution control in process industries*. Tata McGraw-Hill Education.

E-RESOURCES

- 1. https://www.who.int/publications/i/item/9789241548564
- 2. https://cpcb.nic.in/bio-medical-waste/
- 3. <u>https://www.unep.org/resources/report/compendium-technologies-treatmentdestruction-healthcare-waste</u>
- 4. https://cpcb.nic.in/uploads/Projects/Bio-Medical-Waste/BMW-GUIDELINES-COVID_1.pdf
- 5. <u>https://noharm-global.org/documents/non-incineration-medical-waste-treatment-technologies-global-overview</u>

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE (Autonomous)



SUNDARAKKOTTAI, MANNARGUDI- 614016

(For the Candidates admitted in the academic year 2025 - 2026)

DEPARTMENT OF BIOCHEMISTRY

M.Sc., BIOCHEMISTRY

Semester: II-VAC-I: Plant Therapeutics

Course Code: P25BCVA21

Ins. Hrs: 30

OBJECTIVES

- To understand the therapeutic properties of medicinal plants.
- To study bioactive plant compounds and their mechanisms of action.
- To explore the role of ethnobotany in traditional medicine systems. •

UNIT I: Introduction to Plant Therapeutics

History and scope of plant-based medicine, WHO guidelines on herbal medicine, Classification of medicinal plants, Role in human health and disease prevention

UNIT II: Ethnopharmacology

Ayurveda, Siddha, Unani, Indigenous knowledge and ethnobotanical surveys, Sacred and culturally significant plants, Conservation of medicinal plant biodiversity

UNIT III: Bioactive Compounds and Mechanisms of Action

Biosynthesis of plant-derived drugs, Mechanisms of action: Antioxidant, anti-inflammatory, anticancer, antimicrobial, Synergism and plant-drug interactions.

UNIT IV: Pharmacological Evaluation and Quality Control (6 Hours)

In vitro and in vivo screening techniques, Toxicity testing (acute, subacute, chronic), Standardization and quality control of herbal formulations, Good Manufacturing Practices (GMP) for herbal products

UNIT V: Blood Grouping and Transfusion

Plant-derived drugs in clinical use (e.g., paclitaxel, vincristine), Biotechnological approaches in plant drug discovery.

Total Lecture Hours-30

COURSE OUTCOME

The students are able to

- 1. Demonstrate foundational knowledge of therapeutic plant compounds and their classifications.
- 2. Apply ethnopharmacological knowledge to understand traditional uses of medicinal plants.
- 3. Analyze bioactive phytochemicals and evaluate their pharmacological roles.
- 4. Conduct quality control and toxicity assessment of herbal drugs.
- 5. Integrate plant therapeutics in modern pharmaceutical and biotechnological contexts.

(6 Hours)

(6 Hours)

(6 Hours)

(6 Hours)

TEXTBOOKS BOOK(S)

- 1. Evans, W. C. (2009). Trease and Evans' pharmacognosy (16th ed.). Saunders.
- 2. Kokate, C. K., Purohit, A. P., & Gokhale, S. B. (2010). *Pharmacognosy* (45th ed.). Nirali Prakashan.
- 3. Heinrich, M., Barnes, J., Gibbons, S., & Williamson, E. M. (2012). *Fundamentals of pharmacognosy and phytotherapy* (2nd ed.). Elsevier Health Sciences.
- 4. Mukherjee, P. K. (2002). *Quality control of herbal drugs: An approach to evaluation of botanicals*. Business Horizons.
- 5. Sofowora, A. (2008). *Medicinal plants and traditional medicine in Africa* (3rd ed.). Spectrum Books.

REFERENCE BOOK(S)

- 1. Duke, J. A. (2002). Handbook of medicinal herbs (2nd ed.). CRC Press.
- 2. Farnsworth, N. R. (2001). Ethnopharmacology and drug development. John Wiley & Sons.
- 3. Tyler, V. E., Foster, S., & Bratman, S. (2007). *Tyler's herbs of choice: The therapeutic use of phytomedicinals* (3rd ed.). Routledge.
- 4. Sharma, R. K., & Dash, B. (2006). Charaka Samhita. Chowkhamba Sanskrit Series Office.
- 5. Patwardhan, B. (2021). Ayurveda and integrative medicine: Theory and practice. Springer.

E-RESOURCES

- 1. www.who.int/publications/i/item/9241545178.
- 2. <u>www.napralert.org.</u>
- 3. www.nccih.nih.gov/health/herbal-medicine.
- 4. <u>www.kew.org/mpns.</u>

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE (Autonomous)



SUNDARAKKOTTAI, MANNARGUDI- 614016

(For the Candidates admitted in the academic year 2024 – 2025)

DEPARTMENT OF BIOCHEMISTRY

M.Sc., BIOCHEMISTRY

Semester: III-VAC-II: Indian Knowledge System for Health and Wellness Ins. Hrs: 30 **Course Code: P24BCVA32**

OBJECTIVES

- 1. To introduce the foundational concepts, scope, and historical development of IKS.
- 2. To provide an in-depth understanding of traditional Indian health practices.
- 3. To critically analyze the contemporary relevance and integration of traditional health systems with modern medicine.

UNIT I: Introduction to Indian Knowledge Systems

Concept, scope, and relevance of IKS, Historical development of health sciences in ancient India, Integration of body, mind, and spirit in Indian health philosophies

UNIT II: Ayurveda

Basic principles: Panchamahabhuta, Tridosha (Vata, Pitta, Kapha), Concept of health and disease in Ayurveda, Daily and seasonal routines (Dinacharya & Ritucharya), Ayurvedic dietetics and preventive care, Introduction to Rasayana (rejuvenation therapy)

UNIT III: Yoga and Mental Well-being

Philosophy and science of Yoga (Patanjali Yoga Sutras), Ashtanga Yoga (Eight limbs of Yoga), Role of Yoga in stress management and mental health, Introduction to meditation techniques (Dhyana, Pranayama)

UNIT IV: Traditional Practices for Wellness

Siddha and Unani systems: Overview and unique contributions, Naturopathy and traditional healing systems, Importance of rituals, fasting, and seasonal observances, Indian martial arts and their contribution to health (e.g., Kalaripayattu)

UNIT V: Integration and Contemporary Relevance

Current status of traditional systems in India and globally, Role of AYUSH and Ministry of Health & Family Welfare, Challenges in integration with allopathic systems, Future prospects and policy frameworks for sustainable health using IKS.

COURSE OUTCOMES:

The students are able to,

- 1. Explain the fundamental concepts of Indian Knowledge Systems related to health and wellness.
- 2. Identify the principles of Ayurveda, Siddha, and Unani medicine in maintaining health and preventing diseases.
- 3. Understand the essentials of yoga, mudra and meditation for physical and mental health
- 4. Analyze the role of traditional Indian dietary practices and lifestyle modifications in enhancing well-being.

(6 Hours)

(7 Hours)

(5 Hours)

(6 Hours)

(6 Hours)

Total Lecture Hours-30

5. Apply integrative approaches to health by combining traditional and modern medical practices.

TEXT BOOK(S)

- 1. Lad, V. (2002). Textbook of Ayurveda: Fundamental principles of Ayurveda (Vol. 1). Ayurvedic Press
- 2. Lad, V. D. (1993). Ayurveda: The science of self-healing. Laurier Books Limited
- 3. Sivananda, S. (2004). The practice of yoga. Divine Life Society.
- 4. Chopra, D. (2001). Perfect health: A step-by-step program to better mental and physical wellbeing. Bantam Books.
- 5. Saraswati, S. S. (2008). Asana pranayama mudra bandha. Yoga Publications Trust.

REFERENCE BOOK(S)

- 1. Frawley, D. (2000). Ayurveda and the mind: The healing of consciousness. Lotus Press.
- 2. .Saraswati, S. S. (2002). Asana Pranayama Mudra Bandha. Yoga Publications Trust.
- 3. Tiwari, P. (2017). Ayurveda: Secrets of healing. Motilal Banarsidass Publishers.
- 4. Warrier, P. K. (2016). Indian medicinal plants: A compendium of 500 species. Orient Blackswan.
- 5. Pole, S. (2013). Ayurvedic medicine: The principles of traditional practice. Singing Dragon.

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- 1. www.bio-rad.com/webroot/web/pdf/lsr/literature/Bulletin_5279.pdf.
- 2. www.cancer.gov/about-cancer/diagnosis-staging/diagnosis/rt-pcr-fact-sheet.
- 3. <u>www.thermofisher.com/qPCR.</u>
- 4. <u>www.nature.com/articles/s41576-020-0242-x.</u>
- 5. <u>www.qiagen.com/us/knowledge-and-support/learning-hub.</u>