

DISCIPLINE SPECIFIC ELECTIVE COURSE –DSE-20:

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Ayurbiology and Health (BS-DSE-20)	4	2		2	NIL	NA

Learning Objectives:

Though *Ayurveda* is an ancient science, its principles and practices are relevant even today; particularly in the health care sector. The need for a modern scientific evaluation of *Ayurveda* has been recognized. Till date research in *Ayurveda* has however focused on studies on medicinal herbs and their constituent bioactive compounds for herbal drug development and identification of New Chemical entities. However, it is important now to also explore new educational and research programs in *Ayurveda*, that focus on integrating it with the current understanding of Modern Biology that would enable a more rational approach towards harnessing knowledge of *Ayurveda* for modern day healthcare.

This course is focused on the theme of *Ayurveda Biology*, and intends to generate a knowledge interface between *Ayurveda* and life sciences for applications in contemporary healthcare Science. The program aims at providing a platform to students of Modern Biology an understanding of the systemic theoretical foundations, principles and practices of *Ayurveda*. Thus, it works towards bridging the understanding of traditional Indian health sciences with *modern Life Science*.

Course Learning Outcome

Upon successful completion of this course, the student will be able to:

1. Define Health and Wellness as understood in *Ayurveda*
2. Be familiar with factors contributing to *Prakriti*.
3. Understand the correlation of the physiological and biochemical basis of *Prakriti*
4. Discuss concept of nutrition and lifestyle management as a model of disease prevention in *Ayurveda*.
5. To create awareness of how ill-health is conceptualized in *Ayurveda* and what is the basis for disease diagnosis.
6. Understand factors that contribute to disease therapy in *Ayurveda*
7. Understand the physiological basis of *panchakarma*
8. Understand and appreciate the *AUSHADHI* in *Ayurveda*
9. Appreciate the use of medicinal plants and minerals in the formulation of medications
10. Understand the concept of polyherbal formulations in *Ayurvedic* herbal therapy

Course content

THEORY

Credits: 2

Total hours: 30

UNIT I: Principles of Ayurveda: Dosha-Prakriti-environment and phenotypes and Introduction to Ayurbiology **6 hrs**

History and origin of Ayurveda and Vedic culture, Understanding from descriptions in Ayurvedic classical texts about methods of education & learning; research & documentation, Ethics & regulations in medical practices, contemporary relevance of Ayurveda in modern times. Understanding the concept of Tridosha and Panchmahabhutas, the common organizing principles of Trisutra; Physiological group of entities, The concept of Deh and Manas Prakriti. Factors and mechanisms contributing to development of Prakriti; clinical features and importance in health & disease management. Influences of diet, environment, seasons, life style, age on Prakriti

UNIT II: *Anagatbadhapratishedha*: Preventive diet and lifestyle regime **5 hrs**

Ayurveda Nutrition: seasonal & daily regimen including diet management for health maintenance. Concept of Diet Design: Deriving nutrition according to your body constitution, age, place and time as well as Dosha Imbalance. Yogic classification of diet: importance of Satavic, Rajasic & tamasic food. Concept of Langhana: Fasting (non-pharmacological intervention). Correlating dietary regimens of Ayurveda with modern Nutrition concepts. Importance of physical activity, meditation and Sleep in health and disease management. Understanding the importance of Yoga and pranayama in Health lifestyle management.

UNIT III: Bridging Ayurveda with modern biology: Concepts of AyurBiology **7 hrs**

Bridging the gap between Modern Biology, genomics and Ayurveda. Tridosha Biology and molecular basis of prakriti and dosha. Understanding variability in physiological parameters in health and disease in relation to tridosha concept. Use of these parameters in predicting health and disease outcomes based on variability. Understanding the effects of Yoga and meditation on indicators like EEG, Pulmonary and cardiac functions. Pranayama and physiology of breathing, Research avenues in AyurBiology/ Ayurgenomics.

UNIT IV: *Roga Samprapti and Aushadha Skandha* : Prakriti vs Vikriti and Therapeutic avenues in Ayurveda **12 hrs**

Health to disease transitions: Understanding from the Ayurveda point of view. Concept of Dushyas viz; *Dhatu, srotas, Agni* (digestive fire) *mala & Ama*. Concept of Oja- Bala. Roga-Rogi Pariksha: Clinical examination methods described in Ayurveda for personalized management of health & Disease like Prakriti and Vikriti ; in vikriti- agni- ama- khavaigunya. Internal Medication Strategies: Shodhana: Detoxification (panchakarma) and Shamana: Medication for rejuvenation (Rasayana). External Medication Strategies: Massage (Abhyangam), shirodhara, Physiological basis of these therapies, Drug development in Ayurveda, nutraceuticals and polyherbal formulations. introduction of Ayur-pharma, pharmacognosy and pharmacogenomics. Understanding drug development, safety and testing as well as regulatory bodies in Ayurpharma; Role of AYUSH, NMPR, NBPGR, AIIA and CIMAP in the promotion of medicinal plants for preparation of formulations.

PRACTICALS

Credits: 2

Total hours: 60

1. Prakriti assessment by questionnaire
2. Correlation of Prakriti with Physiological tests
 - Body types vs Prakriti through Anthropometric indices
 - Assessment methods skin parameters analysis and prakriti
 - inter-individual variability in PFT, heart rate, Blood pressure and biochemical parameters and Prakriti
3. Identification of secondary metabolites in Ayurvedic Formulations
 - Though qualitative assays
 - Quantitative estimation of Polyphenols, flavanols and alkaloids
 - Separation of the metabolites through TLC
4. Preparation of herbarium of medicinal plants present in ayurvedic formulations
5. Field Visit for collection of Medicinal plants
6. Field visit to an Ayurvedic hospital.

SUGGESTED BOOKS:

1. Ayurveda and Marma Therapy: Energy Points in Yogic Healing by Dr. David Frawley, Dr. Subhash Ranade and Dr. Avinash Lele. <https://www.amazon.in/Ayurveda-Marma-Therapy-Energy-Healing/dp/0940985594>
2. Ayurveda: The Science of Self Healing. Dr.Vasant Lad. <https://www.amazon.in/Ayurveda-Science-Self-healing-Practical-Guide/dp/0914955004>
3. Prakriti: your ayurvedic constitution. R.E Sovoboda <https://www.goodreads.com/en/book/show/217494>

Ayurvedic science of Food and Nutrition. <https://www.amazon.in/Ayurvedic-Science-Nutrition-Sanjeev-Rastogi/dp/1461496276>