Ordinance Governing

Shree Guru Gobind Singh Tricentenary University, Gurugram

Bachelor of Naturopathy & Yogic Sciences (B.N.Y.S.)

Five and half years' Undergraduate Medical Degree in Naturopathy & Yoga
2022

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INTRODUCTION

National Institute of Naturopathy (NIN), Pune, revised the BNYS syllabus, with a view of standardizing BNYS syllabi with uniform durations and course contents across the country in 2012. It was implemented by Rajiv Gandhi University of Health Sciences (RGUHS) in the academic year 2013-14. In the view of new regulations, University restructured the BNYS course and issued ordinance year wise of the course in 1996. The present volume is published incorporating the amendments made by the National Institute of Naturopathy, Pune, to the regulations of BNYS course and addition of certain topics to the syllabi, as well as change in duration from 5 years to5½ years. The ordinance should be read with Revised Ordinance Governing BNYS Degree Course and Curriculum of first year to fourth year – 2013. In view of the standardized syllabus, it was suggested that same be followed at SGT University, Haryana, to be equivalent and in par with excellence in competency and skills in par with other standardized BNYS College in India.

First year BNYS is of twelve-month duration and consists of pre-clinical subjects and subjects describing Yoga and Naturopathy principles, Anatomy, Physiology, Biochemistry, Philosophy of Naturopathy, Principles of Yoga and Basic research and research methodology. Second year BNYS is of twelve-month duration and consists of Para-clinical subjects and subjects describing philosophies of Yoga and Naturopathy clinical subjects, Pathology, Microbiology, Community Medicine, Yoga Philosophy, Basic Pharmacology, Forensic Medicine & Toxicology, Color therapy and magneto biology and Basic research and research methodology. Third year BNYS is of twelve-month duration and consists of Para-clinical subjects and Yoga and Naturopathy clinical subjects, Manipulative Therapies, Acupuncture & Acupressure, Yoga and its applications, Nutrition and Medicinal Herbs, Diagnostic Methods-1 (Naturopathy), Diagnostic Methods-II (conventional), Psychology & Basic Psychiatry and Basic research and research methodology. Final year BNYS is of eighteen months duration and consists of clinical subjects and Yoga and Naturopathy clinical subjects Obstetrics and Gynecology, Yoga therapy, Hydrotherapy and Mud therapy, Fasting therapy & Dietetics, Physical Medicine and Rehabilitation, First Aid and Emergency Medicine, Clinical Naturopathy and Research Methodology and Recent Advances.

In Section I, goals of BNYS course are given. Section II gives general objectives. Section III gives duration of the course, recommendations regarding attendance, internal assessment, distribution of marks for various subjects in professional examinations and criteria for pass. Revised course contents, subjects like Pharmacology, Forensic Medicine and Toxicology, Sanskrit, Principles of Yoga, Herbology, Clinical Naturopathy, Psychology and Basic Psychiatry, Clinical Naturopathy, Research Methodology and Recent Advances are added in this publication – are elaborated in Section IV. Section V deals with topics recommended for teaching of medical ethics.

Research culture:

To inculcate research culture among the BNYS undergraduates at SGT University, thereby making Naturopathy and Yoga, an evidence-based medicine practice. It is hereby proposed that **2nd and 4th**

Saturday of each month in an academic year for 1st, 2nd & 3rd year BNYS to be taught Basic research and Research methodology compulsorily. The Basic research and Research methodology will be non-exam component but an essential part of curriculum.

SECTION I

1 Goals of BNYS Course

1.1 Recognize the health needs of the community and carry out professional obligations ethically and in keeping with the objectives of the national health policy.

1.2 Develop the skills in most of the competencies, and training that are required to deliver the Naturopathy and Yoga health care system.

1.3 Become aware of the contemporary advances and developments in the discipline concerned.

1.4 Acquire a spirit of scientific inquiry and is oriented to the principles of research methodology and epidemiology.

1.5 Become proficient in their profession by developing scientific temper and improve educational experience.

1.6 Identify social, economic, environmental, biological and emotional determinants of health in a given case and take them into account while planning therapeutic, rehabilitative, preventive and promotive measures/strategies.

1.7 Plan and devise measures in Naturopathy and yoga for the prevention and rehabilitation of patients suffering from disease and disability.

1.8 Demonstrate skills in documentation of individual case details as well as morbidity data relevant to the assigned situation.

1.9 Demonstrate empathy and humane approach towards patients and their families and exhibit interpersonal behavior in accordance with the societal norms and expectations.

1.10 Play the assigned role in the implementation of national health programs, effectively and responsibly.

1.11 Organize and supervise the chosen/assigned health care services Demonstrating adequate managerial skills in the clinic/hospital or the field Situation.

1.12 Develop skills as a self-directed learner; recognize continuing educational needs, select and use appropriate learning resources.

1.13 Demonstrate competence in basic concepts of research methodology and epidemiology and be able to critically analyze relevant published research literature.

1.14 To implement all National health policies.

1.15 Work towards realization of ‘Health for all’, as a national goal through naturopathy and yoga.

1.16 To follow the medical ethics and to fulfill the social and professional responsibilities as a Naturopathy and Yoga Physician through drugless therapies.

1.17 Be competent in the practice of holistic medicine with expert knowledge and experience in promotive, preventive, curative and rehabilitative aspects of diseases.

1.18 Become proficient in their profession by developing scientific temper and improve educational experience.

2 Institutional Goals

After the medical undergraduate program, the students must:

2.1 Be able to expertly diagnose and manage common diseases and health problems of individuals as well as community, work with the health team as a fully qualified doctor at primary, secondary or tertiary levels, with his/her clinical experience and skills in history, physical examination and relevant investigations.

2.2 Be proficient in promotive, preventive, curative and rehabilitative medicine and therapy for common health issues.

2.3 Be adept in different therapeutic modalities and their administration.

2.4 Develop a humane attitude towards one’s clients and understand economic, environmental, social, psychological and cultural factors that influence health.

2.5 Enjoy an urge for self-improvement, directed towards advanced expertise or research in any chosen area of health care.

2.6 Have enough knowledge about implementation of National Health Programs and the basic factors required for the same, which are as follows.

- 2.6.1 Family Welfare and Maternal and Child Health (MCH).
- 2.6.2 Sanitation and Water Supply.
- 2.6.3 Prevention and Control of communicable and non-communicable diseases.
- 2.6.4 Immunization.
- 2.6.5 Health education.

2.7 Possess management skills in human resources, materials and resource management in health care delivery.

2.8 Be competent in recognizing community health issues and design, institute curative and preventive measures and evaluate the outcome of these measures, thus working towards resolving these issues.

2.9 Be able to work successfully in a variety of health care settings.

2.10 Develop integrity, responsibility, reliability, dependability and compassion, which are characteristics required for successful professional life.

2.11 Develop leadership and communication skills to work as leading investigator or clinician in health care teams.

SECTION II

1. Objectives of Medical Graduate Training Program

1.1. To effectively integrate the conventional basic sciences (e.g. human physiology) with the traditional medical systems and to enhance the understanding of their effects and therapeutic potential.

1.2 To provide state of the art learning facilities (e.g., audio visual aids, interactive learning systems) to conceptualize the ancient medical system.

1.3 To run advanced laboratories under each department (basic and clinical sciences) for effective experimental training and research.

1.4 To explore the possibilities of promoting effective integrated medical practice at conventional medical facilities attached to the institute.

1.5 To provide the best possible clinical setting for clinical training and research.

1.6 To prepare every Yoga and Naturopathic physician with an in depth understanding of Basic sciences, superior clinical training and with an outlook for research and development.

SECTION III

1 Course of Study:

The duration of the course shall be 5 ½ years (Five and half years). The course shall include a period of regular study of four and a half (4 ½) years, followed by a compulsory rotatory internship of one year.

The period of regular study shall be divided into four phases – first, Second and Third year of one year each and Final years of one and half (1½) years of the B.N.Y.S. Medical Degree Course respectively.

2 Attendance:

A candidate shall be considered to have satisfied the requirement of attendance for each Part/Phase if he /she attends not less than 75 per cent of the theory and practical classes actually conducted up to the end of the Phase in that subject.

Such a candidate having shortage of attendance shall be required to attend 75 per cent of the theory and practical classes actually held up to the end of the term by repeating that subject of that Part/Phase during a subsequent term.

3 Teaching Hours:

The allotment of time (in number of hours) to teach Theory and to conduct Practical/Clinical and Tutorial /Demonstration, Seminar in each subject shall be:

I YEAR B.N.Y.S. (12 months)

No. of Subjects	No. of Papers	SUBJECTS	TOTAL HOURS
I	01.	Anatomy – I	335hrs
	02.	Anatomy – II	
II	03.	Physiology – I	315hrs
	04	Physiology – II	
III	05.	Biochemistry	255hrs
IV	06.	Philosophy of Naturopathy	245hrs
V	07.	Yoga Practices	330hrs
VI	08.	Basic research & Research Methodology	2nd & 4th Saturday (20hrs)
		Total Hours	**1500hrs**

II YEAR - B.N.Y.S. (12 Months)

No. of Subjects	No. of papers	SUBJECTS	TOTAL HOURS
I	01.	Pathology	290hrs
II	02.	Microbiology	200hrs
III	03.	Community Medicine	250hrs
IV	04.	Yoga Philosophy	290hrs
V	05.	Basic Pharmacology	150hrs
VI	06.	Color Therapy and Magnetotherapy	150hrs
VII	07.	Forensic Medicine & Toxicology	150hrs
VIII	08.	Basic Research & Research Methodology	2nd & 4th Saturday (20hrs)
		Total Hours	**1500hrs**

III YEAR B.N.Y.S. (12 months)

No. of Subjects	No. of Papers	SUBJECTS	TOTAL HOURS
I	01.	Manipulative Therapies	190hrs
II	02.	Acupuncture	200hrs
III	03.	Yoga Applications	250hrs
IV	04.	Psychology & Basic Psychiatry	150hrs
V	05.	Nutrition & Medicinal herbs	250hrs
VI	06.	Diagnostic Methods	190hrs
VII	07	Diagnostic Methods -II	250hrs
VIII	08	Basic Research & Research Methodology	2^{nd} & 4^{th} Saturday(20hrs)
		Total Hours	**1500hrs**

IV YEAR B.N.Y.S. (18 months)

No. of Subjects	No. of Papers	SUBJECTS	TOTAL HOURS
I	01.	Fasting Therapy & Dietetics	300hrs
II	02.	Obstetrics & Gynecology	250hrs
III	03.	Yoga Therapy	250hrs
IV	04.	Hydrotherapy	250hrs
V	05.	Physical Medicine & Rehabilitation	250hrs
VI	06.	First Aid & Emergency Medicine	200hrs
VII	07.	Clinical Naturopathy	300hrs
VIII	08.	Research Methodology & Recent Advances	200hrs
		Total Hours	**2000**

GRAND TOTAL FOR 4 ½ YEARS IS 6500 hours.

Internship program:

A candidate after passing final B.N.Y.S. Medical Degree Examination shall undergo the compulsory rotatory internship of one year duration, which shall consist of work/duty postings in the following sections/departments for the period specified against them.

S. No.	Department	Duration
1.	Philosophy of Yoga and Naturopathy	1 Month
2.	Yoga and Mind-Body Medicine	1 Month
3.	Pathology and Microbiology	1 Month
4.	Community Medicine	1 Month
5.	Energy Medicine	1 Month
6.	Manipulative Therapies, Physical Medicine & Rehabilitation	1 Month
7.	Fasting, Dietetics, Nutrition, & Medicinal Herbs	1 Month
8.	Diagnostic Methods	1 Month
9.	Obstetrics & Gynecology	1 Month
10.	Hydrotherapy & Mud Therapy	1 Month
11.	Naturopathic Medicine	1 Month
12.	Allied Health Sciences	1 Month
	TOTAL	**12 Months**

4 Scheme of Examination:

The examination/s shall be held as per the date of Examination notified by the University. There should be one Internal & One External Examiner for all practical &Viva exams for each subject. A candidate shall register for all the subjects of a term/year, when he/she appears for the first time to the examination of that Part.

4.1 Internal Assessment: Scheme of Examination:

There shall be an internal assessment which follows broadly the principles enunciated by the University in each subject for which 30 per cent of the marks are set apart and these will be added in the final grade in the University examinations. There shall be a minimum of two assignments and two periodical tests in every subject of each year to assess the progress of the candidate.

If a candidate fails in an Examination, his/her internal assessment shall be assessed again as if he/she is a regular student for the second attempt only.

Theory

Minimum of 3 examinations is recommended. The examination preceding the university examination may be similar to the University Examination. Average marks of the better of the two notified internal examinations should be reduced to the marks allotted for internal assessment for each subject and should be sent to the university.

Practical

A minimum of one clinical test may be conducted at the end of each ward postings in all the clinical subjects.

Assistant professor and above can conduct internal assessment examination. Average of best two examination marks should be taken into consideration while calculating the marks of internal assessment.

The internal assessment marks of both theory and practical obtained by the candidates should be sent to the University at least 15 days prior to the commencement of the theory examination.

4.2 University Examination – Subjects and Distribution of Marks

I YEAR BNYS (12months)

Sr. No.	Nomenclature	Theory	Theory (Internal)	Practical (External)	Practical (Internal)	Oral	Overall Total	Overall Pass Marks
		Max	Max	Demonstration/Presentation/Viva-Voce	Max	Max		
1	Anatomy-I	70	30				100	50
2	Anatomy -II	70	30				100	50
3	Anatomy Practical			50	20	30	100	50
4	Physiology - I	70	30				100	50
5	Physiology - II	70	30				100	50
6	Physiology Practical			50	20	30	100	50
7	Biochemistry	70	30				100	50
8	Biochemistry - Practical			50	20	30	100	50
9	Philosophy of Naturopathy	70	30				100	50
10	Philosophy of Naturopathy - Practical			50	20	30	100	50
11	Yoga Practices	70	30				100	50
12	Yoga Practical			50	20	30	100	50

II YEAR BNYS (12 Months)

Sr. No.	Nomenclature	Theory	Theory (Internal)	Practical (External)	Practical (Internal)	Oral	Overall Total	Overall Pass Marks
		Max	Max	Demonstration/Presentation/Viva-Voce	Max	Max		
1	Pathology	70	30				100	50
2	Pathology Practical			50	20	30	100	50
3	Microbiology	70	30				100	50
4	Microbiology Practical			50	20	30	100	50
5	Community Medicine	70	30				100	50
6	Community Medicine Practical			50	20	30	100	50
7	Yoga Philosophy	70	30				100	50
8	Yoga Philosophy Practical			50	20	30	100	50
9	Colour Therapy & Magnetotherapy	70	30				100	50
10	Colour Therapy & Magnetotherapy practical			50	20	30	100	50
11	Basic pharmacology	70	30				100	50
12	Basic pharmacology practical			50	20	30	100	50
13	Forensic medicine & Toxicology	70	30				100	50
14	Forensic medicine & Toxicology practical			50	20	30	100	50

III YEAR BNYS (12 Months)

Sr. No.	Nomenclature	Theory	Theory (Internal)	Practical (External)	Practical (Internal)	Oral	Overall Total	Overall Pass Marks
		Max	Max	Demonstration/Presentation/Viva-Voce	Max	Max		
1	Manipulative Therapies	70	30				100	50
2	Manipulative Therapies Practical			50	20	30	100	50
3	Acupuncture	70	30				100	50
4	Acupuncture Practical			50	20	30	100	50
5	Yoga Applications	70	30				100	50
6	Yoga Applications Practical			50	20	30	100	50
7	Diagnostic Methods I	70	30				100	50
8	Diagnostic Methods I Practical			50	20	30	100	50
9	Diagnostic Methods II	70	30				100	50
10	Diagnostic Methods II Practical			50	20	30	100	50
11	Nutrition & Medicinal Herbs	70	30				100	50
12	Nutrition & Medicinal Herbs Practical			50	20	30	100	50
13	Psychology & Basic Psychiatry	70	30				100	50
14	Psychology & Basic Psychiatry Practical			50	20	30	100	50

IV YEAR BNYS (18 Months)

Sr. No.	Nomenclature	Theory	Theory (Internal)	Practical (External)	Practical (Internal)	Oral	Overall Total	Overall Pass Marks
		Max	Max	Demonstration/Presentation/Viva-Voce	Max	Max		
1	Obstetrics and Gynaecology	70	30				100	50
2	Obstetrics and Gynaecology Practical			50	20	30	100	50
3	Yoga Therapy	70	30				100	50
4	Yoga Therapy Practical			50	20	30	100	50
5	Hydrotherapy	70	30				100	50
6	Hydrotherapy Practical			50	20	30	100	50
7	Physical Medicine and Rehab	70	30				100	50
8	Physical Medicine and Rehab Practical			50	20	30	100	50
9	Clinical Naturopathy	70	30				100	50
10	Clinical Naturopathy Practical			50	20	30	100	50
11	Fasting therapy & Dietetics	70	30				100	50
12	Fasting therapy & Dietetics Practical			50	20	30	100	50
13	First Aid & Emergency Medicine	70	30				100	50
14	First Aid & Emergency Medicine			50	20	30	100	50
15	Research methodology & Recent Advances	70	30				100	50
16	Research methodology & Recent Advances Practical			50	20	30	100	50

NOTE:

01.
- All question papers shall have 2 Sections – namely Section A (10 Marks) & Section –B (60 Marks).
- Section A will contain 10 Multiple Choice Questions – 1 mark each. No choice provision is allowed in Section A.
- Section B will contain 2 Parts. Part – 1 will have 2 Long Essays of 10 marks each with provision of 1 choice. Part – 2 will have 10 Short Essays of 5 marks each with provision of 2 choices.

02. There should be one Internal & one External examiner for all, practical & viva exams for each subject.

03. All Theory Papers are for 3 hours duration.

4.3 Eligibility for examination:

A candidate who has passed in all the subjects of First B.N.Y.S. Medical Degree examination shall be eligible to be promoted to Second B.N.Y.S. Medical Degree course.

A candidate is eligible for carry over facility only if he/she has appeared for all the subjects of that particular examination.

First year to Second Year – 2 subjects carry over

Second year to Third year - 2 subjects carry over

Third Year to Final year – 2 subjects carry over

Completion of the degree should not go beyond 11 years from the date of admission.

4.4 Criteria for Pass

To be eligible for promotion to the II, III & IV years, the candidate has to complete and pass in all the subjects of I, II & III years with an exemption of one subject in each year.

The candidate is declared to have been successful provided he/she secures minimum 40% and above in theory, 50% and above in oral/practical/clinical separately each subject but should get 50% in aggregate in all.

4.5 Declaration of Class:

A candidate who passes all the subjects of one examination in the first attempt only be eligible for a class.

No class or rank shall be declared for candidate who does not pass any examination in the first attempt, and such a candidate shall be eligible only for a pass class.

The percentage of marks for declaring pass/Second/First Class and First class with Distinction shall be as follows:

Distinction	Not less than 75 percent of the Aggregate Marks
First class	Not less than 65 percent of the Aggregate Marks
Second class	Not less than 50 percent of the Aggregate Marks
Pass class	Candidate who passes the examination in more than one attempt

Note: - A candidate who passes in all the subjects of any Examination only in first attempt shall be eligible for First class with Distinction /First/Second Class

SECTION IV

SUBJECTS & COURSE CONTENT

1. ANATOMY

1.1 Goals and Objectives

1.1.1 Goal

It aims at giving inclusive knowledge of the gross and microscopic structure and development of human body to provide a basis for assessing the correlation of organs and structures and anatomical basis for disease presentations.

1.1.2 Objectives

1.1.2.1 Knowledge:

After completion of the program, the student must be able to:

1.1.2.1.1 Understand normal human anatomy clinically important inter-relationship and functional anatomy of bodily structures.

1.1.2.1.2 Comprehend histological structures of various tissues and organs and co-relate structure and function in order to understand diseased states.

1.1.2.1.3 Recognize basic structure and connections of the central nervous system, understand the regulation and integration of various organs and systems and be skilled in locating lesion sites according to deficits in diseased states.

1.1.2.1.4 Explain developmental basis of variations and abnormalities with respect to sequential development of organs and systems, teratogens, genetic mutations and environmental hazards.

1.1.2.2 Skills

After completion of the program, the student must be able to:

1.1.2.2.1 Locate and identify body structures including topography of living body.

1.1.2.2.2 Histologically, identify tissues and organs.

1.1.2.2.3 Identify gross congenital anomalies and be familiar with the principles of karyotyping.

1.1.2.2.4 Interpret new imaging techniques such as CT, Sonogram, MRI etc. after understanding their basic principles.

1.1.2.2.5 Understand clinical basis of some common clinical procedures i.e., intramuscular and intravenous injection, lumbar puncture and kidney biopsy etc.

1.1.2.3 Integration

Student shall be capable of understanding the regulation and integration of the functions of the organs and systems in the body and interpret the anatomical basis of disease process using the combined teaching of other basic sciences.

1.2 Human Anatomy – I (Duration: 12 months)

Total hours: 330 (Theory: 95+100 Practical: 140)

1.2.1 Introduction to Anatomy

1.2.1.1 Nomenclature

1.2.1.2 Anatomical positions

1.2.1.3 Axes and planes

1.2.1.4 Tissues

1.2.1.5 Movements

1.2.2 General Histology

1.2.2.1 Detailed structure of cell and its components and their functional mechanisms

1.2.3 Osteology (Including ossification)

1.2.3.1 Types of bones

1.2.3.2 Classification of bones

1.2.3.3 Description of various bones

1.2.3.3.1 Upper limb

1.2.3.3.2 Thorax

1.2.3.3.3 Abdomen and pelvis

1.2.3.3.4 Vertebral column

1.2.4 Arthrology

1.2.4.1 Classification of joints

1.2.4.2 Construction of joints

1.2.4.3 Description of various joints of:

1.2.4.3.1 Upper limb

1.2.4.3.2 Thorax

1.2.4.3.3 Vertebral column

1.2.5 Myology

1.2.5.1 Types of muscles

1.2.5.2 Muscles of upper limb, thorax, abdomen and pelvis

1.2.5.3 Origin, insertion, blood supply, nerve supply, applied anatomy and actions of these muscles

1.2.6 Respiratory System

1.2.6.1 Upper respiratory tract – Nose, Pharynx, Larynx

1.2.6.2 Trachea & Bronchial tree

1.2.6.3 Lungs

1.2.6.4 Pleura

1.2.6.5 Mediastinum

1.2.7 Cardiovascular System

1.2.7.1 Heart – Position, Surface anatomy and its description

1.2.7.2 Great vessels – Aorta, Pulmonary trunk, superior vena cava, inferior vena cava and their branches

1.2.7.3 Arteries and Veins – Structure of arteries and veins, important arteries and veins of the body

1.2.8 Digestive System

1.2.8.1 Oral cavity

1.2.8.2 Teeth

1.2.8.3 Hard palate

1.2.8.4 Soft palate

1.2.8.5 Esophagus

1.2.8.6 Stomach

1.2.8.7 Small intestine

1.2.8.8 Large intestine

1.2.8.9 Anal canal

1.2.8.10 Liver

1.2.8.11 Gall bladder

1.2.8.12 Bile duct

1.2.8.13 Pancreas

1.2.8.14 Spleen

1.2.8.15 Peritoneum

1.2.9 Mesentery and position of the above organs in the abdominal quadrants.

1.2.9.1 Urinary System

1.2.9.2 Kidney

1.2.9.3 Ureter

1.2.9.4 Urinary bladder

1.2.9.5 Male urethra

1.2.9.6 Female urethra

1.2.10 Lymphatic System

1.2.10.1 Lymph, lymph glands, lymph duct, thoracic duct, cisterna chyli

1.2.10.2 Location of major groups of lymph nodes in the body and their drainage areas

NOTE: The concerned colleges have to make necessary arrangements for providing human cadavers in the anatomy department for teaching.

1.3 **Human Anatomy – II (Duration: 12 Months)**

1.3.1 Osteology (Including ossification)

Description of various bones of

1.3.1.1 Lower limb

1.3.1.2 Skull as a whole

1.3.1.3 Individual cranial bones of skull

1.3.2 Arthrology

Description of various joints of

1.3.2.1 Lower limb

1.3.2.2 Skull as a whole

1.3.2.3 Skull and vertebral column

1.3.3 Myology

Description of various muscles of

1.3.4 Lower limb

1.3.5 Head

1.3.6 Neck

(Origin, insertion, blood supply, nerve supply, applied anatomy and actions of these muscles)

1.3.7 Reproductive System

1.3.7.1 Male reproductive organs

Penis, Testes, Vas Deferens, Spermatic Cord, Epididymis, Seminal Vesicles, Ejaculatory Duct Prostate Gland Etc.

1.3.7.2 Female reproductive organs

1.3.7.2.1 External genital organs

Vulva, Clitoris, Vagina

1.3.7.2.2 Inguinal Region perineum

1.3.7.2.3 Internal genital organs

Uterus, Cervix, Fallopian tubes, Ovaries, Ligaments of uterus and ovaries

1.3.7.2.4 Mammary glands

1.3.8 Endocrine System

Description of Pituitary, Pineal, Thyroid, Parathyroid, Thymus, Spleen, Pancreas, Suprarenal, Ovaries and Testes

1.3.9 Nervous System

Division of nervous system, central nervous system, peripheral nervous system, cerebral hemispheres, midbrain, pons, medulla oblongata, cerebellum, spinal cord, autonomic nervous system.

1.3.9.1 Meninges: Dura mater and arachnoid mater

1.3.9.2 CSF

1.3.9.3 Ventricular system

1.3.9.4 Cranial nerves

1.3.10 Spinal nerves

1.3.11 Important plexuses: Cervical, Brachial, Lumbar, Sacral and their nerve descriptions.

1.3.12 Organs and Special Senses

1.3.12.1 Tongue

1.3.12.2 Nose

1.3.12.3 Eye and associated structures

1.3.12.4 Ear

1.3.12.5 Integumentary system

1.3.13 Surface Anatomy

1.3.13.1 Projection of the outline of heart, its borders, surface and valves.

1.3.13.2 Lungs – borders, fissures, hila, pleura and diaphragm

1.3.13.3 Liver

1.3.13.4 Kidney

1.3.13.5 Abdominal viscera

1.3.13.6 Pelvic viscera

1.4 Histology

1.4.1 General Histology

1.4.1.1 Microscope

1.4.1.2 Cell

1.4.1.3 Epithelial Tissue I

1.4.1.4 Epithelial Tissue II

1.4.1.5 Connective Tissue – Bones and Cartilages

1.4.1.6 Muscular Tissues

1.4.1.7 Nerve Tissues (TS & LS of peripheral nerve, sensory and sympathetic ganglion, optic nerve)

1.4.1.8 Epithelial glands (serous, mucous and mixed salivary gland)

1.4.1.9 Circulatory system (large artery, medium sized artery, larger vein)

1.4.1.10 Lymphatic system (lymph nodes, thymus, tonsils, spleen)

1.4.1.11 Skin and appendages

1.4.1.12 Placenta and umbilical cord

1.4.2 Systemic Histology

1.4.2.1 Respiratory system (lungs, trachea)

1.4.2.2 Esophagus and stomach

1.4.2.3 Liver, gall bladder, pancreas

1.4.2.4 Urinary system I (Kidney)

1.4.2.5 Urinary system II (Ureter, bladder)

1.4.2.6 Small and large intestine

1.4.2.7 Reproductive system – Female

1.4.2.8 Reproductive system – Male

1.4.2.9 Upper GIT (tongue)

1.4.2.10 Hypophysis cerebra, thyroid and suprarenal glands

1.4.2.11 Eye – cornea and retina

1.5 **Practical**

1.5.1 Gross Anatomy (Dissection / Demonstration of following):

1.5.1.1 Upper Limb

1.5.1.1.1 Dissection: Pectoral, scapular, shoulder, arm, forearm (5 weeks)

1.5.1.1.2 Prosected Parts: Joints, Palm and dorsum of hand

1.5.1.2 Thorax

1.5.1.2.1 Dissection: Chest wall, mediastinum, lungs and heart

1.5.1.3 Abdomen

1.5.1.3.1 Dissection: anterior abdominal wall and inguinal region, viscera and posterior abdominal wall

1.5.1.4 Pelvis

1.5.1.4.1 Dissection: Pelvic viscera and blood vessels and nerve sagittal section (M & F) (2 weeks)

1.5.1.4.2 Prosecuted Parts: Sole of the foot and joints

1.5.1.5 Head and Neck

1.5.1.5.1 Dissection: Scalp, superficial and deep dissection of face and neck (8 – 10 weeks)

1.5.1.5.2 Prosecuted Parts: Orbit, eyeball, submandibular region, temporal and infra-temporal fossa, cranial cavity, naso and oro-pharyngeal regions, larynx and pharynx. Cross sections at C-4, C-6 levels, sagittal section of head and neck

1.5.1.6 Nervous System

Section of brain and prosecuted specimens and major functional areas; Gross structure of brain and spinal cord and study of gross sections as mentioned earlier (in brief).

1.5.2 Demonstrations

1.5.2.1 Bones as described in the osteology section

1.5.2.2 Brain and Spinal Cord

1.5.3 Specific Skills

1.5.3.1 To localize important pulsations and the structure against which pressure can be applied in case of bleeding and trauma of particular artery.

1.5.3.2 To elicit superficial and deep reflexes.

1.5.3.3 To demonstrate muscle testing and movements at joints.

1.5.3.4 To locate for: lumbar puncture, sterna puncture, pericardial tapping and liver biopsy.

1.5.3.5 To locate veins for venipuncture.

1.5.3.6 To locate the site for emergency such as tracheostomy.

1.6 **Textbooks:**

1.6.1 Textbook of Anatomy (III volumes) – BD Chaurasia

1.6.2 Textbook of Anatomy – Hamilton

1.6.3 Practical Anatomy – Cunningham

1.6.4 Human Embryology – Inderbir Singh

1.6.5 Bailey's textbook of histology

1.6.6 Medical Embryology – Langman

1.6.7 Textbook of Clinical Anatomy by Neeta V Kulakarni

1.6.8 Histology textbook by Latha V

1.7 **Reference Books**

1.7.1 Textbook of Anatomy – Gray

1.7.2 Atlas of histology – Diforie

1.7.3 Atlas of histology – Poddar

1.7.4 Textbook of human histology – Veena Bharihoke

1.7.5 A color atlas of human anatomy – Mcminn

1.7.6 Grant's method of Anatomy – Grant

1.7.7 Regional and applied Anatomy – RJ Last

2. PHYSIOLOGY

2.1 Goals and Objectives

2.1.1 Goal

The goal of teaching Physiology to undergraduate students is aimed at giving the student comprehensive knowledge of the normal functions of the organ systems of the body to facilitate comprehension of the physiological basis of health and disease.

2.1.2 Objectives

2.1.2.1 Knowledge

After completion of the program, the student will be able to:

2.1.2.1.1 Explicate the normal functioning of all the organ systems and their interactions for well co- ordinated body function.

2.1.2.1.2 Appreciate the relative contribution of each organ system to the homeostasis.

2.1.2.1.3 Explain the physiological aspects of normal growth and development.

2.1.2.1.4 Illustrate the physiological response and adaptations to environmental stresses.

2.1.2.1.5 List physiological principles underlying pathogenesis and disease management.

2.1.2.2 Skills

After completion of the program, the student will be able to:

2.1.2.2.1 Conduct experiments designed to study physiological phenomena.

2.1.2.2.2 Interpret experimental/investigative data.

2.1.2.2.3 Differentiate between normal and abnormal data from results of tests, which he/she has done and observed in the laboratory.

2.1.2.3 Integration

At the end of the integrated course the student shall acquire an integrated knowledge of organ structure and function and regulatory mechanisms.

2.2 Physiology – I (Duration: 12 Months)

Total hours: 315(Theory: 85+100 Practical: 130)

2.2.1 General Physiology

2.2.1.1 Cell structure and function

2.2.1.2 Transport mechanisms across biological membrane

2.2.1.3 Body fluids and homeostasis

2.2.1.4 Thermoregulation

2.2.2 **Blood**

2.2.2.1 Plasma proteins

2.2.2.1.1 Normal values

2.2.2.1.2 Origin, Functions and variations in health and disease

2.2.2.2 Bone marrow

2.2.2.2.1 Composition and functions

2.2.2.3 Erythrocytes

2.2.2.3.1 Morphology and variations in health and disease

2.2.2.3.2 Site and stages of development

2.2.2.3.3 Necessary factors

2.2.2.3.4 Regulation of development of erythrocytes

2.2.2.3.5 Life span and fate of erythrocytes

2.2.2.3.6 Erythrocyte sedimentation rate (ESR)

2.2.2.3.7 Packed cell volume (PCV)

2.2.2.4 Hemoglobin

2.2.2.4.1 Structure, synthesis, function and metabolism

2.2.2.4.2 Types of hemoglobin

2.2.2.5 Anemia – definition and classification

2.2.2.6 Jaundice – definition and classification

2.2.2.7 Spleen- structure and function

2.2.2.8 Leucocytes

2.2.2.8.1 Classification, morphology, development and functions

2.2.2.8.2 Variation in health and disease

2.2.2.9 Thrombocytes

2.2.2.9.1 Development, morphology and functions

2.2.2.9.2 Variation in health and disease

2.2.2.10 Hemostasis

2.2.2.10.1 Mechanism of hemostasis, coagulation of blood

2.2.2.10.2 Fibrinolysis and bleeding disorders

2.2.2.11 Anticoagulants

2.2.2.11.1 Mechanism of action and clinical applications

2.2.2.12 Blood groups

2.2.2.12.1 Classification

2.2.2.12.2 ABO and RH system

2.2.2.12.3 Blood transfusion, indication and hazards

2.2.2.13 Lymph and tissue fluids

2.2.2.13.1 Formation and functions of lymph

2.2.2.13.2 Physiology of reticular system

2.2.2.14 Immune system

Cellular and humoral immunity

2.2.3 Cardiovascular System

2.2.3.1 Heart

2.2.3.1.1 Structure and properties of cardiac muscle

2.2.3.1.2 Innervations of heart, junctional tissue of heart

2.2.3.1.3 Generation and spread of cardiac impulse

2.2.3.2 Electrocardiography

2.2.3.2.1 Einthoven's Law

2.2.3.2.2 ECG leads, normal ECG and its interpretation

2.2.3.3 Cardiac cycle

2.2.3.3.1 Pressure and volume changes (mechanical events)

2.2.3.3.2 Principles of echocardiograph

2.2.3.3.3 Jugular venous pulse tracing, radial pulse tracing

2.2.3.3.4 Measurement and regulation of cardiac output

2.2.3.4 Heart sounds

2.2.3.4.1 Description, Causation and relation to other events in cardiac cycle

2.2.3.4.2 Clinical significance of heart sounds

2.2.3.4.3 Stethoscopy

2.2.3.5 Blood pressure

2.2.3.5.1 Definition, regulation and factors influencing BP

2.2.3.5.2 Measurement of blood pressure

2.2.3.5.3 Physiology of hemorrhage and shock

2.2.3.6 Circulations

2.2.3.6.1 Blood vessels

2.2.3.6.2 Physical principles of blood flow, regulation of blood flow.

2.2.3.6.3 Coronary, Splanchnic, cutaneous and capillary, cerebral circulation

2.2.3.6.4 Cardiovascular changes in altitude and exercise

2.2.4 Respiratory System

Introduction, internal and external respiration, physiological anatomy of respiratory system

2.2.4.1 Mechanism of Respiration

2.2.4.1.1 Inspiration and expiration

2.2.4.1.2 Role of respiratory muscles and thoracic cage

2.2.4.1.3 Pressure and volume changes during respiration

2.2.4.1.4 Work of breathing

2.2.4.1.5 lung compliance and its significance in health and disease

2.2.4.2 Lung volumes and capacities

2.2.4.2.1 Lung volumes and capacities and their measurements

2.2.4.3 Ventilation

2.2.4.3.1 Composition of atmospheric, inspired, alveolar and expired air

2.2.4.4 Pulmonary circulation

2.2.4.4.1 Pulmonary circulation, ventilation – perfusion relationship

2.2.4.4.2 Diffusion of gases across pulmonary membrane

2.2.4.4.3 Oxygen uptake, transport and delivery

2.2.4.4.4 Carbon dioxide uptake, transport and delivery

2.2.4.5 Organization of the respiratory centers

2.2.4.5.1 Nervous and chemical regulation of respiration

2.2.4.5.2 Classification and characteristics of hypoxia, cyanosis, asphyxia, hypercapnia, hypocapnia dyspnea, apnea and orthopnea and periodic breathing

2.2.4.5.3 Respiratory changes in high altitude

2.2.4.5.4 Physiology of acclimatization and hyperbarism

2.2.4.5.5 Respiratory / pulmonary function tests

2.2.4.5.6 Non-respiratory functions of lungs

2.2.4.5.7 Artificial respiration

2.2.4.5.8 Importance of therapeutic administration of oxygen and carbon dioxide

2.2.4.5.9 Respiratory changes during exercise

2.2.5 Digestive System

2.2.5.1 Introduction, functional anatomy of digestive system

2.2.5.2 Salivary glands

2.2.5.2.1 Composition, functions of saliva

2.2.5.2.2 Regulation of secretion of saliva

2.2.5.3 Stomach

2.2.5.3.1 Functional anatomy of stomach

2.2.5.3.2 Functions of stomach

2.2.5.3.3 Composition and functions of gastric juice

2.2.5.3.4 Regulation of secretion and mechanism of HCL secretion

2.2.5.3.5 Methods of study of gastric function and its supplied aspect

2.2.5.4 Pancreas

2.2.5.4.1 Functional anatomy of pancreas

2.2.5.4.2 Composition and functions of pancreatic juice

2.2.5.4.3 Regulation of pancreatic secretion

2.2.5.4.4 Methods of study of pancreatic secretion

2.2.5.5 Liver and Gall Bladder

2.2.5.5.1 Functional anatomy of liver and biliary system

2.2.5.5.2 Functions of liver and gall bladder

2.2.5.5.3 Formation, storage and secretion of bile

2.2.5.5.4 Composition, function and regulation of release of bile

2.2.5.5.5 Entero-hepatic circulation

2.2.5.5.6 Tests for liver function

2.2.5.6 Small intestine

2.2.5.6.1 Functional anatomy and functions of small intestine

2.2.5.6.2 Composition, function and mechanism of secretions of Succus entericus

2.2.5.7 Large intestine

2.2.5.7.1 Functional anatomy and functions of large intestine

2.2.5.8 Gastro-intestinal hormones

2.2.5.8.1 Release and functions

2.2.5.9 Gastro-intestinal movements

2.2.5.9.1 Mastication, deglutition and vomiting

2.2.5.9.2 Movements of stomach, filling and emptying of stomach

2.2.5.9.3 Movements of small intestines

2.2.5.9.4 Movements of large intestine and defecation

2.2.5.9.5 Regulation of movement

2.2.5.10 Digestion and absorption of carbohydrates, fats, proteins and vitamins, minerals and water

2.2.6 <u>Excretory System</u>

2.2.6.1 General introduction, organs of excretion with special emphasis on evolution of excretory mechanisms

2.2.6.2 Functional anatomy of renal glands and renal circulation

2.2.6.3 Nephron -

2.2.6.3.1 Mechanism of urine formation

2.2.6.3.2 Concentration and acidification of urine

2.2.6.3.3 Renal function tests

2.2.6.4 Non-excretory functions of kidney

2.2.6.4.1 Physiology of micturition and its abnormalities

2.2.6.5 Skin – structure and functions

2.3 Physiology-II (Duration: 12 Months)

2.3.1 Endocrine System

2.3.1.1 Introduction - evolutionary background and organization of endocrine control systems

2.3.1.2 Hormones

2.3.1.2.1 Classification of hormones and mechanism of hormone action

2.3.1.2.2 Regulation of hormone secretion and feedback system

2.3.1.3 Hypothalamo -hypophyseal system – hormones released

2.3.1.4 Endocrine glands

2.3.1.4.1 Pituitary glands –functional anatomy of anterior and posterior pituitary glands. source, chemical nature, actions, regulation and applied aspect of anterior and posterior pituitary hormones

2.3.1.4.2 Thyroid gland – functional anatomy, hormones, applied aspect

2.3.1.4.3 Parathyroid gland – functional anatomy, hormones, applied aspect

2.3.1.4.4 Adrenal gland – Functional anatomy of adrenal cortex and medulla, hormones and applied physiology of adrenal cortex and medulla

2.3.1.4.5 Islets of Langerhans – Functional anatomy, hormones, applied aspect

2.3.1.4.6 Other hormones – prostaglandins, thromboxane, acetylcholine, serotonin, histamine, bradykinin, leptin, prostacyclin, leukotrienes, atrial natriuretic peptide, brain natriuretic peptide, melatonin

2.3.2 Reproductive System

2.3.2.1 Physiology of reproduction

2.3.2.1.1 Introduction to physiology of reproduction

2.3.2.1.2 Sex determination, sex differentiation and chromosomal study

2.3.2.2 Male Reproductive System

2.3.2.2.1 Development and structure of testes

2.3.2.2.2 Functions of testes

2.3.2.2.3 Gonadotropins and gonadal hormones

2.3.2.2.4 Composition of semen and structure of human sperm

2.3.2.3 Female Reproductive System

2.3.2.3.1 Functional anatomy of female reproductive system

2.3.2.3.2 Functional anatomy and functions of ovary

2.3.2.3.3 Gonadotropins and ovarian hormones

2.3.2.3.4 Physiology of menstrual cycle

2.3.2.3.5 physiology of ovulation and pregnancy

2.3.2.3.6 Physiology of placenta, gestation and parturition

2.3.2.3.7 Physiological basis of tests for ovulation and pregnancy

2.3.2.3.8 Physiology of lactation

2.3.3 Nerve and Muscle Physiology

2.3.3.1 Neuron

2.3.3.1.1 Morphology of neuron and Classification of neuron and nerve fibers

2.3.3.1.2 Properties of nerve fibers and measure of excitability

2.3.3.1.3 Degeneration and regeneration of nerve fibers

2.3.3.2 Muscle

2.3.3.2.1 Classification of muscle

2.3.3.2.2 Skeletal muscle – structure, properties and functions

2.3.3.2.3 Excitation -contraction coupling

2.3.3.2.4 Neuromuscular junction

2.3.3.2.5 Smooth muscle – structure, types, properties, functions

2.3.3.2.6 Cardiac muscle – structure, properties, functions

2.3.3.2.7 Myasthenia gravis

2.3.3.2.8 Starling's law and its applications

2.3.4 Central Nervous System

2.3.4.1 Structural and functional organization of central nervous system

2.3.4.2 Neuroglia

2.3.4.3 Sensory physiology

2.3.4.3.1 Classification and general properties of receptors

2.3.4.4 Synapse

2.3.4.4.1 Types of synapses and their structure

2.3.4.4.2 Functions and properties of synapse

2.3.4.4.3 Classification and actions of neurotransmitters

2.3.4.5 Reflexes

2.3.4.5.1 Classification of Reflexes

2.3.4.5.2 General properties of reflexes (with examples)

2.3.4.5.3 Reciprocal inhibition and reciprocal innervation

2.3.4.6 Spinal cord

2.3.4.6.1 Functional anatomy of spinal cord

2.3.4.6.2 Ascending tracts – situation, origin, course, termination and functions

2.3.4.6.3 Physiology of pain, different pathways of pain sensation

2.3.4.6.4 Physiology of referred pain,

2.3.4.6.5 Gate control theory, analgesia system

2.3.4.6.6 Descending tracts – situation, origin, course, termination and functions

2.3.4.6.7 Extrapyramidal tracts – situation, origin, course, termination and functions

2.3.4.6.8 Upper and lower motor neurons and their lesions

2.3.4.6.9 Brown Sequard syndrome, Syringomyelias

2.3.4.7 Functional anatomy and functions of brain stem

2.3.4.8 Thalamus

2.3.4.8.1 Functional anatomy, connections and functions

2.3.4.8.2 Effects of lesions

2.3.4.9 Internal capsule – situation, divisions, effect of lesions

2.3.4.10 Hypothalamus

2.3.4.10.1 Functional anatomy, connections and functions

2.3.4.10.2 Effect of lesions

2.3.4.11 Cerebellum

2.3.4.11.1 Functional anatomy, connections and functions

2.3.4.11.2 Effects of lesions and tests for cerebellar function

2.3.4.12 Basal ganglia

2.3.4.12.1 Functional anatomy, connections and functions

2.3.4.12.2 Diseases of basal ganglia and its clinical evaluation

2.3.4.13 Cerebral cortex

2.3.4.13.1 Functional anatomy of cerebral cortex

2.3.4.13.2 Functional areas and its functions of frontal lobe, parietal lobe, temporal lobe, occipital lobe

2.3.4.13.3 Methods of study of cortical connections and functions

2.3.4.14 Limbic System

2.3.4.14.1 Functional anatomy, connections and functions

2.3.4.15 Reticular formation

2.3.4.15.1 Functional anatomy, connections and functions of reticular formation

2.3.4.15.2 EEG, physiology of sleep and wakefulness

2.3.4.16 Vestibular apparatus

2.3.4.16.1 Functional anatomy, connections and functions

2.3.4.16.2 Effects of lesions and their assessment

2.3.4.16.3 Physiology of maintenance and regulation of muscle tone, posture and equilibrium

2.3.4.16.4 Decerebrated rigidity and righting reflexes

2.3.4.17 Higher functions

2.3.4.17.1 Learning, speech, memory, behavior and emotions

2.3.4.18 Cerebro-spinal fluids

2.3.4.18.1 Formation, circulation, functions of CSF

2.3.4.18.2 Properties and composition of CSF

2.3.4.18.3 Method of collection of CSF and its clinical significance

2.3.4.18.4 Blood – brain barrier

2.3.4.19 Autonomic Nervous System

2.3.4.19.1 Sympathetic nervous system and its functions

2.3.4.19.2 Parasympathetic nervous system and its functions

2.3.5 Special Senses

2.3.5.1 Smell

2.3.5.1.1 Structure of olfactory receptors,

2.3.5.1.2 Physiology of olfaction and olfactory discrimination

2.3.5.1.3 Olfactory pathway and defects of olfaction

2.3.5.2 Taste structure of taste receptor, primary taste sensation and taste pathway and applied aspects

2.3.5.3 Vision

2.3.5.3.1 Functional anatomy of eye

2.3.5.3.2 Structure of visual receptors

2.3.5.3.3 Neural, chemical, electrical basis of visual process

2.3.5.3.4 Visual acuity, field of vision, tests for visual acuity and field of vision

2.3.5.3.5 Visual pathways and effects of lesions in visual pathways

2.3.5.3.6 Pupillary reflexes

2.3.5.3.7 Color vision, color blindness and tests for color blindness

2.3.5.3.8 Errors of refraction and its correction,

2.3.5.3.9 Physiology of aqueous humor

2.3.5.3.10 Dark and light adaptation

2.3.5.3.11 Lacrimal glands, Formation and circulation of tears

2.3.5.4 Hearing

2.3.5.4.1 Functional anatomy and functions of external, middle and internal ear

2.3.5.4.2 Impedance matching and tympanic reflex

2.3.5.4.3 Auditory pathways and auditory cortex

2.3.5.4.4 Mechanism of hearing

2.3.5.4.5 Frequency analysis, sound localization,

2.3.5.4.6 Defects of hearing

2.3.5.4.7 Audiometry, other tests for hearing defects

2.4 Physiology Practical

2.4.1 Blood

- **2.4.1.1** Preparation and examination of peripheral blood smear and determination of differential leucocyte count
- **2.4.1.2** Determination of total red blood cell count
- **2.4.1.3** Determination of total leucocyte count
- **2.4.1.4** Determination of platelet count
- **2.4.1.5** Determination of osmotic fragility of erythrocytes
- **2.4.1.6** Determination of erythrocyte sedimentation rate, packed cell volume
- **2.4.1.7** Determination of hemoglobin concentration of blood
- **2.4.1.8** Determination of ABO and Rh blood groups
- **2.4.1.9** Determination of bleeding time, clotting time

2.4.2 Cardiovascular system

- **2.4.2.1** Determination of the effect of posture on blood pressure
- **2.4.2.2** Clinical examination of the human cardiovascular system (CVS)

2.4.3 Respiration

- **2.4.3.1** Spirometry (demonstration)
- **2.4.3.2** Examination of human respiratory system

2.4.4 Neurophysiology

- **2.4.4.1** Examination of motor and sensory system
- **2.4.4.2** Examination of cranial nerves

2.4.5 Special senses

- **2.4.5.1** Determination of visual acuity
- **2.4.5.2** Clinical assessment of color vision (Demonstration)
- **2.4.5.3** Perimetry: Mapping of visual field

2.5 Textbooks

- **2.5.1** Textbook of Medical Physiology – AC Guyton and Hall
- **2.5.2** Review of Medical Physiology – WF Ganong´s
- **2.5.3** Concise Textbook of Medical Physiology – SK Chaudhury
- **2.5.4** Understanding Medical Physiology – RL Bijlani
- **2.5.5** Essentials of Medical Physiology – K Sembulingam

2.6 **Reference Books**

2.6.1 Best and Taylor's Physiological basis of medical practice

2.6.2 Berne and Levy Physiology

2.6.3 Practical Physiology – C L Ghai

2.6.4 Practical Physiology – Dr. V. G.Ranade

3. BIOCHEMISTRY

3.1 Goals and Objectives

3.1.1 Goals:

The goals of introducing biochemistry to the undergraduate students is to make them understand the scientific basis of the life processes at the molecular level and to orient them towards the application of the knowledge in solving clinical problems.

3.1.2 Objectives

3.1.2.1 Knowledge

After completion of the course, the student shall be able to:

3.1.2.1.1 Elucidate the molecular and functional organization of a cell and list its sub cellular components.

3.1.2.1.2 Outline structure, function and inter-relationships of bio molecules and consequences of deviation from normal.

3.1.2.1.3 Review the fundamental aspects of enzymology and clinical application wherein regulation of enzymatic activity is altered.

3.1.2.1.4 Illustrate digestion and assimilation of nutrients and consequences of malnutrition.

3.1.2.1.5 Integrate the various aspects of metabolism and their regulatory pathways.

3.1.2.1.6 Explain biochemical basis of inherited disorders with their associated sequelae.

3.1.2.1.7 Describe mechanisms involved in maintenance of body fluid and pH homeostasis.

3.1.2.1.8 Delineate the molecular mechanisms of gene expression and regulation, the principles of genetic engineering and their application in medicine.

3.1.2.1.9 Summarize the molecular concept of body defenses and their application in medicine.

3.1.2.1.10 Outline the biochemical basis of environmental health hazards, biochemical basis of cancer and carcinogenesis.

3.1.2.1.11 Familiarize with principles of various conventional and specialized laboratory investigations and instrumentation analysis and interpretation of a given data.

3.1.2.1.12 Suggest experiments to support theoretical concepts and clinical diagnosis.

3.1.2.2 Skills

At the end of the course, the student will be able to:

3.1.2.2.1 Perform conventional techniques/instruments to perform biochemical analysis relevant to clinical screening and diagnosis.

3.1.2.2.2 Analyze and interpret investigative data.

3.1.2.2.3 Demonstrate the skills of solving scientific and clinical problems and decision making

3.1.2.3 Integration

The integrated knowledge of biochemistry will help the students to integrate molecular events with the structure and function of the human body in health and disease.

3.2 **Theory (Duration: 12 months; Hours: 155+100)**

3.2.1 Biomolecules & biochemical perspective of a cell

3.2.2 Cell structure

3.2.3 Subcellular organelles

3.2.4 Cell membrane

3.2.5 Transport mechanisms

3.2.6 Chemistry of Carbohydrates

3.2.6.1 Definition, classification and biological importance of carbohydrates

3.2.6.2 Monosaccharides; Classification, Isomerism and properties of monosaccharides, modified monosaccharides

3.2.6.3 Disaccharides

3.2.6.4 Polysaccharides

3.2.7 Chemistry of Lipids

3.2.7.1 Definition, classification and biological importance of Lipids

3.2.7.2 Simple lipids: Composition of Triacyl glycerol & Waxes.

3.2.7.3 Compound lipids: Composition & functions of Phospholipids, glycolipids & lipoproteins

3.2.7.4 Derived lipids: Fatty acids - Classification & Properties fatty acids, Steroids & sterols

3.2.7.5 Micelle, Liposomes

3.2.8 Chemistry of Proteins

3.2.8.1 Definition, classification & properties of amino acids

3.2.8.2 Definition, classification & properties of proteins

3.2.8.3 Structural organization of proteins

3.2.8.4 Biological significance of amino acids & proteins

3.2.8.5 Plasma proteins, their functions and clinical significance

3.2.9 Enzymes

3.2.9.1 Definition, classification,

3.2.9.2 Kinetics, mechanism of enzymatic catalysis.

3.2.9.3 Factors influencing enzymatic catalyzes, enzyme activators and inhibitors.

3.2.9.4 Regulation of enzyme activity,

3.2.9.5 Isoenzymes & clinical enzymology

3.2.10 Vitamins

3.2.10.1 Definition and classification of vitamins

3.2.10.2 Brief account of chemistry, source, RDA, biochemical functions, deficiency diseases, Vitamin antagonists and hypervitaminosis of each vitamin

3.2.11 Mineral metabolism

3.2.11.1 Classification of minerals

3.2.11.2 Brief account of chemistry, source, RDA, biochemical functions, deficiency diseases of each mineral

3.2.12 Digestion and absorption

3.2.12.1 Digestion and absorption of carbohydrates

3.2.12.2 Digestion and absorption of lipids

3.2.12.3 Digestion and absorption of proteins.

3.2.13 Carbohydrate Metabolism

3.2.13.1 Major metabolic pathways: Glycolysis, pyruvate oxidation, Citric acid cycle, Gluconeogenesis, HMP Shunt pathway & glycogen metabolism

3.2.13.2 Minor metabolic pathways: Metabolism of Fructose and Galactose,

3.2.13.3 Regulation of blood sugar, glucose tolerance test, Diabetes mellitus& other disorders of carbohydrate metabolism.

3.2.14 Biologic Oxidation

3.2.14.1 Redox potential

3.2.14.2 High energy compounds

3.2.14.3 Oxidative Phosphorylation

3.2.14.4 Electron transport chain

3.2.15 Lipid metabolism

3.2.15.1 Biosynthesis and degradation of fatty acids

3.2.15.2 Metabolism of cholesterol

3.2.15.3 Ketone bodies: their synthesis, utilization and conditions leading to ketoacidosis

3.2.15.4 Chemistry and metabolism of lipoproteins, hyper lipoproteinemia

3.2.15.5 Prostaglandins

3.2.15.6 Fatty liver, Obesity & other lipid storage disease.

3.2.16 Protein metabolism

3.2.16.1 Overview of protein metabolism

3.2.16.2 Nitrogen balance

3.2.16.3 Formation and disposal of ammonia

3.2.16.4 General metabolism of amino acids

3.2.16.5 Inborn errors of amino acid metabolism

3.2.17 Molecular biology

3.2.17.1 Chemistry of Nucleic acids: Definition, classification, composition of nucleic acids; Structure and function of DNA; Types, structure & functions of RNA

3.2.17.2 Metabolism of Nucleic acids: Synthesis and breakdown of purines; Synthesis and breakdown of pyrimidine

3.2.17.3 DNA Replication, Inhibitors of DNA replication

3.2.17.4 DNA Transcription & Post-transcriptional processing.

3.2.17.5 Genetic code

3.2.17.6 Protein synthesis, inhibitors of protein synthesis & post-translational processing

3.2.18 Integration of metabolism

3.2.18.1 Metabolic effects of insulin & glucagon

3.2.18.2 The feed/fast cycle

3.2.18.3 Biochemistry of starvation

3.2.19 Biochemistry of blood

3.2.19.1 Porphyrins, Synthesis and degradation of heme; Porphyria; Jaundice

3.2.19.2 Structure & functions of hemoglobin

3.2.19.3 Abnormal hemoglobin & hemoglobinopathies

3.2.19.4 Plasma Proteins

3.2.19.5 Immunoglobulins

3.2.19.6 Blood pH & its regulation

3.2.19.7 Role of kidney and lungs in maintaining pH of blood

3.2.19.8 Acidosis and Alkalosis

3.2.20 Energy metabolism and Nutrition

3.2.20.1 Calorific value of foods

3.2.20.2 Basal metabolic rate and its importance

3.2.20.3 Specific dynamic action

3.2.20.4 Energy requirements for physical activity

3.2.20.5 Balanced diet; Role of carbohydrates, proteins & lipids

3.2.20.6 Nutritive value of proteins, protein-energy malnutrition (PEM)

3.2.21 Clinical biochemistry

3.2.21.1 Tools of biochemistry

3.2.21.2 Liver function tests

3.2.21.3 Renal function tests

3.2.22 Environmental biochemistry

3.2.22.1 Environmental pollutants

3.2.22.2 Xenobiotics, interaction with biomolecules, effects & metabolism

3.2.22.3 Biochemical characteristics of cancer and carcinogenesis

3.3 **Practical**

3.3.1 Qualitative Experiments

3.3.1.1 General reactions Carbohydrates

3.3.1.1.1 Reactions of monosaccharides - glucose and fructose

3.3.1.1.2 Reactions of disaccharides - lactose. maltose and sucrose

3.3.1.1.3 Reactions of polysaccharides - starch and dextrin

3.3.1.2 General reactions of proteins (albumin. casein and gelatin)

3.3.1.2.1 Color reactions of proteins

3.3.1.2.2 Precipitation & coagulation reactions of proteins

3.3.1.3 General reactions of non-protein-nitrogen compounds (N P N) - Urea. Uric acid and creatinine

3.3.1.4 Analysis of Urine.

3.3.1.4.1 Analysis of normal urine.

3.3.1.4.2 Analysis of abnormal urine.

3.3.2 Quantitative Experiments

3.3.2.1 Blood Sugar estimation by Glucose Oxidase method

3.3.3 Demonstrative Experiments

3.3.3.1 Colorimetry and colorimeter

3.3.3.1.1 Estimation of concentration of serum Cholesterol

3.3.3.1.2 Estimation of concentration of serum Urea

3.3.3.1.3 Estimation of concentration of serum Uric acid

3.3.3.1.4 Estimation of concentration of serum triglycerides

3.3.3.1.5 Estimation of concentration of serum calcium

3.3.3.2 Paper chromatography

3.3.3.3 Electrophoresis

3.3.3.4 Glucose tolerance test (GTT)

3.4 Textbooks

3.4.1 Recommended textbooks for Biochemistry

3.4.1.1 Textbook of Biochemistry - by U. Sathyanarayana, U Chakrapani

3.4.1.2 Textbook of Biochemistry – by DM Vasudevan, Sreekumari S

3.4.1.3 Lippincott's Illustrated Reviews- Biochemistry by Pamela C Champe, Richard A Harvey

3.4.1.4 Textbook of Medical Laboratory Technology by Praful B Godkar, Darshan P Godkar

3.4.1.5 Essentials of Biochemistry by PankajNaik

3.4.2 Reference Books for Biochemistry

3.4.2.1 Harper's Illustrated Biochemistry, Robert K. Murray, Daryl K. Granner, and Victor W. Rodwell.

3.4.2.2 Biochemistry. Lubert Stryer. W.H. Freeman and Company, New York.

3.4.2.3 Principles of Biochemistry. Ed. Lehinger, Nelson and Cox. CBS Publishers and distributors.

3.4.2.4 Textbook of Biochemistry with Clinical Correlations. Ed. Thomas M. Devlin, Wiley-Liss Publishers.

3.4.2.5 Tietz Textbook of Clinical Chemistry. Ed. Burtis and Ashwood. W.B. Saunders Company.

3.4.2.6 Biochemistry. Ed. Donald Voet and Judith G. Voet. John Wiley & Sons, Inc

3.4.2.7 Textbook of Biochemistry - by West and Todd.

3.4.2.8 Laboratory Manual of Biochemistry by Pattabhirama and Acharya.

4. PHILOSOPHY OF NATUROPATHY

4.1 Goals and Objectives

4.1.1 Goals:

The goals of introducing philosophy of Naturopathy to the undergraduate students is to make them understand philosophical basis of the system of Naturopathy, including concepts of

health, causes and pathogenesis of disease and brief introduction to the various therapeutic modalities used in Naturopathy.

4.1.2 Objectives

4.1.2.1 Knowledge

After completion of the course, the student shall be able to:

4.1.2.1.1 Elucidate the history of Naturopathy including major contributors to the field and their work.

4.1.2.1.2 Understand the evolution and composition of the human body according to different schools of medicine such as Naturopathy, Yoga, Ayurveda, Homeopathy, Modern Medicine, etc.

4.1.2.1.3 Firmly establish his/her diagnostic and therapeutic thought processes in the fundamental principles of Naturopathy:

4.1.2.1.4 Laws of nature according to Henry Lindlahr

4.1.2.1.5 Concepts of health and disease according to Naturopathy

4.1.2.1.6 Ten basic principles of Naturopathy

4.1.2.1.7 Concept of Panchamahabhuthas and Naturopathy

4.1.2.1.8 Foreign matter, toxin accumulation, theory of Toxemia, Unity of disease and Unity of Cure

4.1.2.1.9 Concept of vitality

4.1.2.1.10 Panchatantras, Shareera Dharmas

4.1.2.1.11 Holistic approach of Naturopathy

4.1.2.1.12 Modern perspectives of Naturopathy

4.1.2.1.13 Natural rejuvenation

4.1.2.1.14 Understand naturopathic viewpoints of concepts like hygiene, vaccination, family planning, personal life and prevention of diseases, geriatrics, etc, and implement them in his/her practice

4.1.2.1.15 Understand Principles behind using the diagnostic procedures of Naturopathy, like spinal diagnosis, facial diagnosis, iris diagnosis, and chromo diagnosis.

4.1.2.1.16 Demonstrate knowledge of recent advances and research in Naturopathy principles/theories.

4.1.2.2 Skills

At the end of the course, the student will be able to:

4.1.2.2.1 Demonstrate basic knowledge of the various therapeutic modalities utilized in Naturopathy.

4.1.2.2.2 Describe the various principles of Naturopathy with respect to the body, health, disease and therapy.

4.1.2.3 Integration

The integrated knowledge of philosophy of Naturopathy will help the students to integrate concepts of human body in health and disease with respect to Naturopathy in terms of diagnosis and management.

4.2 **Duration: 12 months: Theory: 145+100 practical: 50**

4.2.1 The Medical Profession & Medical Evolution- an Introduction

4.2.2 Concept of Health & Disease through the ages

4.2.3 The Human Body

4.2.3.1 The evolution of human body

4.2.3.2 Philosophy of the body, mind, soul, life, spirit and spiritual body with reference to various cultures, philosophies, Vedas and Modern view

4.2.3.3 Composition of the human body, according to Ayurveda, Naturopathy, Yoga, Modern Medicine, Homeopathy

4.2.4 An Introduction to Nature Cure or Naturopathy- Definitions, concepts & theories of various pioneers in the field

4.2.5 History of Naturopathy & Philosophy of Naturopaths

4.2.5.1 Chronological highlights of Naturopathy

4.2.5.2 Philosophy of Indian Naturopaths.

4.2.5.2.1 Vegiraju Krishnamaraju

4.2.5.2.2 Vinoba Bhave

4.2.5.2.3 Mahatma Gandhi.

4.2.5.2.4 Dr. S. J. Singh

4.2.5.2.5 Dr. J. M. Jussawala

4.2.5.3 Philosophy of Foreign Naturopaths.

4.2.5.3.1 Aesculapius

4.2.5.3.2 Hippocrates

4.2.5.3.3 The School of Salerno

4.2.5.3.4 Paracelsus.

4.2.5.3.5 Vincent Priessnitz

4.2.5.3.6 Sebastian Kneipp

4.2.5.3.7 Arnold Rickli

4.2.5.3.8 Louis Kuhne

4.2.5.3.9 Adolf Just

4.2.5.3.10 John H Tilden

4.2.5.3.11 Sigmund Freud

4.2.5.3.12 Henry Lindlahr

4.2.6 Fundamental principles, concepts & theories of Naturopathy.

4.2.6.1 Laws of Nature according to Henry Lindlahr

4.2.6.2 Catechism of Nature Cure according to Henry Lindlahr

4.2.6.3 Concepts of Health according to Naturopathy

4.2.6.4 Concepts of Disease according to Naturopathy

4.2.6.5 The 10 basic principles of Naturopathy

4.2.6.6 Principles of Natural Medicine in the West

4.2.6.6.1 The Healing Power of Nature (Vis Medicatrix Naturae)

4.2.6.6.2 Identify and Treat the Causes (Tolle Causam)

4.2.6.6.3 First Do No Harm (Primum Non Nocere)

4.2.6.6.4 Doctor as Teacher (Docere)

4.2.6.6.5 Treat the Whole Person

4.2.6.6.6 Prevention

4.2.6.6.7 Herring's law of cure

4.2.6.7 Concept of Panchamahabhootas & Naturopathy

4.2.6.8 Foreign matter and toxins accumulation in the body and its importance in elimination through different ways or channels.

4.2.6.9 Unity of disease, Unity of cure and way of treatment.

4.2.6.10 Theory of Toxemia- Toxins and anti-toxins, their generation, mitigation in nature cure way

4.2.6.11 Concept of Vitality & Vital economy

4.2.6.12 How Nature Cures- The Natural healing mechanisms

4.2.6.13 Arogya Rakshak Panchatantras and their importance in maintenance of good health prevention of diseases and treatment of diseases through lifestyle modification.

4.2.6.14 Shareera Dharmas – *Ahara, Nidra Bhaya, Maithuna*

4.2.6.15 Natural Immunity & how to acquire natural immunity in diseases.

4.2.6.16 Inflammation- Naturopathic perspective.

4.2.6.17 Naturopathy: a blend of Drugless Therapies

4.2.6.18 Holistic approach of Naturopathy

4.2.6.19 Modern perspectives of Naturopathic Medicine

4.2.6.19.1 Understanding Homeostasis

4.2.6.19.2 Metabolism of Xenobiotics

4.2.6.19.3 Aging, Free Radicals and Antioxidants

4.2.6.20 Hygiene & importance of physical and mental hygiene in health and disease

4.2.6.21 Vaccinations and inoculation – The Naturopathic view.

4.2.6.22 Family planning by Natural therapeutics.

4.2.7 Introduction to The Diagnostic procedures in Naturopathy

4.2.7.1 Spinal Analysis

4.2.7.2 Facial Diagnosis

4.2.7.3 Iris Diagnosis

4.2.7.4 Chromo Diagnosis

4.2.8 Natural rejuvenation

4.2.9 Personal life and prevention of diseases

4.2.10 Geriatrics and Naturopathy

4.2.11 Introduction to various systems of Medicine

4.2.11.1 Modern Medicine

4.2.11.2 Ayurveda

4.2.11.2.1 Introduction

4.2.11.2.2 Definition of Prakriti and its categories.

4.2.11.2.3 Swastha Vrittam

4.2.11.2.3.1 *Dinacharya*

4.2.11.2.3.2 *Ratricharya*

4.2.11.2.3.3 *Ritucharya*

4.2.11.2.3.4 *Vegadharanam*

4.2.11.3 Homeopathy

4.2.11.4 Unani

4.2.11.5 Siddha

4.2.12 Comparative study of Naturopathy with other systems of Medicine

4.2.13 Basic essentials of a Naturopathy practitioner - an introduction to qualities of a Naturopathy &Yoga Practitioner, Approach to the Patient with a Naturopathy view, Ethical considerations, Understanding the Scope & Limitations

4.2.14 Recent Advances in Naturopathy

4.2.14.1 Introduction to Psychosomatic Diseases & Psychoneuroimmunology

4.2.14.2 Introduction to Mind-Body Medicine

4.2.14.3 Lifestyle & psychosocial behavior

4.2.14.4 Introduction to Integrative Medicine

4.2.15 An introduction to Research & its importance in Naturopathy

4.2.16 Recent advances in Naturopathy

4.3 **Practical**

Students should be introduced to various treatment procedures used in Naturopathy. Brief outlines of the following therapies in naturopathy including understanding the basic classification & procedure through observation and demonstration:

4.3.1 Fasting

4.3.2 Exercises

4.3.3 Rest and relaxation

4.3.4 Regular habits like sun bath, barefoot walking on grass

4.3.5 Hydrotherapy

4.3.5.1 Baths

4.3.5.1.1 Hipbath

4.3.5.1.2 Spinal bath

4.3.5.1.3 Steam bath

4.3.5.1.4 Foot bath

4.3.5.1.5 Full Immersion bath

4.3.5.2 Packs

4.3.5.2.1 Chest pack

4.3.5.2.2 Abdominal pack

4.3.5.2.3 Gastro-Hepatic pack

4.3.5.2.4 Kidney Pack

4.3.5.2.5 Full wet-sheet pack

4.3.6 Internal Application of Water

4.3.6.1 Enema

4.3.6.2 Colon Hydrotherapy

4.3.6.3 Water Drinking

4.3.7 Mud Therapy

4.3.8 Balneotherapy

4.3.9 Heliotherapy & Chromo therapy

4.3.10 Massage Therapy

4.3.11 Magneto therapy

4.3.12 Chiropractic

4.3.13 Osteopathy

4.3.14 Physiotherapy

4.3.15 Nutrition & Dietetics with special emphasis on Natural Diet

4.3.16 Acupuncture, Acupressure & Reflexology

4.3.17 Aromatherapy

4.3.18 Bio feed back

A Practical Record book should be maintained to document the above observations.

4.4 Textbooks

4.4.1	Philosophy of Nature Cure	Henry Lindlahr
4.4.2	Practice of Nature Cure	Henry Lindlahr
4.4.3	Human Culture and Cure	Dr. E.D. Babbitt
4.4.4	Practical Nature Cure	K. Laxman Sharma
4.4.5	History and Philosophy of Nature Cure	S.J. Singh
4.4.6	My Nature Cure	M.K. Gandhi
4.4.7	Natural Health Care – A to Z	Belinda Gran
4.4.8	Introduction to Natural Hygiene	Herbert. M Shelton
4.4.9	Textbook of Natural Medicine	Joseph E. Pizzorno & Michael T.Murray
4.4.10	Nature Cure treatments	Jindal
4.4.11	Complete handbook of Nature cure	H. K. Bakhru
4.4.12	Toxemia	J. H. Tilden
4.4.13	Return to Nature	Adolf Just

4.5 Reference Books

4.5.1	My Nature Cure or Practical Naturopathy	S.J. Singh
4.5.2	The Science of Facial Expression	Louis Kuhne
4.5.3	The Story of My Experiments with Truth	M.K Gandhi
4.5.4	Ayurveda for health and long life	Dr.R.K.Garde
4.5.5	Fundamentals of Ayurveda	K. N. Udupa
4.5.6	Siddha Medicine	Ram Murthy
4.5.7	Homeopathic Philosophy	Kent
4.5.8	Everybody's Guide to Nature Cure	Harry Benjamin
4.5.9	Prayer	M.K. Gandhi
4.5.10	Diet and Diet Reforms	M.K. Gandhi
4.5.11	Panchatantra	Venkat Rao
4.5.12	Nature Cure	J.N. Jussawalla
4.5.13	The Encyclopedia of Natural Medicine	Joseph E. Pizzorno & Michael T.Murray

5. PRINCIPLES OF YOGA

5.1 Goals and Objectives

5.1.1 Goal:

The goal of teaching Yoga to undergraduate students is to familiarize them with basic principles of Yoga with respect to history, definitions, philosophy and practices of Yoga, with emphasis of Ashtanga Yoga.

5.1.2 Objectives:

5.1.2.1 Knowledge:

After the completion of the course, the student shall be able to:

5.1.2.1.1 Explain the various definitions of Yoga, history of Yoga and branches of Yoga.

5.1.2.1.2 Describe kinds of Yogasanas, its importance, methods, rules, regulations and limitations.

5.1.2.1.3 Illustrate the various limbs of Ashtanga Yoga.

5.1.2.1.4 Demonstrate knowledge of pranayamas, prana and lifestyle, breathing and lifespan.

5.1.2.2 Skills:

After the completion of the course, the student shall be able to:

5.1.2.2.1 Demonstrate various types of Yogasanas in their correct method of performance.

5.1.2.2.2 Demonstrate different pranayamas.

5.1.2.2.3 Explain about the definitions, origin, branches of Yoga.

5.1.2.3 Integration

At the completion of training, the student should be able to comprehend the basic principles of Yoga.

5.2 Duration: 12 months (Theory: 100 practical: 230)

5.2.1 What is Yoga and various definitions of Yoga.

5.2.2 History of Yoga (Relative chronology, Yoga before the time of Patanjali, Indus Valley Civilization).

5.2.3 Outlines on branches of Yoga – Raja, Hatha, Jnana, Karma, Bhakti, Mantra, Kundalini and Laya.

5.2.4 Introduction to Yogasanas

5.2.4.1 Definition of Yogasanas

5.2.4.2 Yogasanas and Prana

5.2.4.3 Yogasanas and Kundalini

5.2.4.4 Yogasanas and the mind-body connection

5.2.4.5 Yogasanas and Exercises

5.2.5 Classifications of Yogasanas – Beginners group, Intermediate group, Advanced group, dynamic and static Yogasanas.

5.2.6 Introduction to Pranayama

5.2.6.1 Definition

5.2.6.2 Prana and lifestyle

5.2.6.3 Breath, health and Pranayama

5.2.6.4 Breathing and Lifespan

5.2.6.5 Pranayama and spiritual aspiration

5.2.7 Introduction to AshtangaYoga

5.2.7.1 Yama

5.2.7.2 Niyama

5.2.7.3 Asana

5.2.7.4 Pranayama

5.2.7.5 Pratyahara

5.2.7.6 Dharana

5.2.7.7 Dhyana

5.2.7.8 Samadhi

(Concept only – as orientation/introduction)

5.2.8 Asanas – their importance, methods, rules, regulations and limitations.

5.2.9 Meditative postures

5.2.9.1 Padmasana

5.2.9.2 Siddhasana

5.2.9.3 Vajrasana

5.2.9.4 Sukhasana

5.2.10 Cultural postures

5.2.10.1 Halasana

5.2.10.2 Dhanurasana

5.2.10.3 Sarvangasana

5.2.10.4 Paschimottanasana

5.2.10.5 Trikonasana

5.2.11 Relaxation postures

5.2.11.1 Shavasana

5.2.11.2 Makarasana

5.2.11.3 Sitali Dandasana

5.2.11.4 Sitali Tadasana

5.2.12 Suryanamaskara

5.2.13 Research in Yoga

5.2.14 Recent Advances in Yoga

5.3 **Practical**

5.3.1 Joint movements

5.3.2 Loosening exercises

5.3.3 Sukshma Vyayama

5.3.4 Stretchings

5.3.5 Breathing exercises

5.3.6 Suryanamaskara

5.3.7 Asanas

5.3.7.1 Standing

5.3.7.1.1 Tadasana

5.3.7.1.2 Ardha Kati Chakrasana

5.3.7.1.3 Kati Chakrasana

5.3.7.1.4 Trikonasana

5.3.7.1.5 Vrikshasana

5.3.7.1.6 Utthita Trikonasana

5.3.7.1.7 Veerabhadrasana

5.3.7.1.8 Parsvottanasana

5.3.7.1.9 Parighasana

5.3.7.2 Supine

5.3.7.2.1 Shavasana

5.3.7.2.2 Matsyasana

5.3.7.2.3 Sarvangasana

5.3.7.2.4 Halasana

5.3.7.2.5 Chakrasana

5.3.7.2.6 Pawanamuktasana

5.3.7.2.7 Setubandhasana

5.3.7.2.8 Parvottanasana

5.3.7.2.9 Vipareetakarani

5.3.7.2.10 Karnapeedasana

5.3.7.2.11 Suptakonasana

5.3.7.3 Prone

5.3.7.3.1 Makarasana

5.3.7.3.2 Bhujangasana – 1 and 2

5.3.7.3.3 Ardha Shalabhasana

5.3.7.3.4 Shalabhasana – 1

5.3.7.3.5 Dhanurasana

5.3.7.3.6 Adho mukha svanasana

5.3.7.4 Sitting

5.3.7.4.1 Vakrasana

5.3.7.4.2 Ardhamatsyendrasana

5.3.7.4.3 Paschimottanasana

5.3.7.4.4 Ushtrasana

5.3.7.4.5 Vajrasana

5.3.7.4.6 Padmasana

5.3.7.4.7 Baddha Padmasana

5.3.7.4.8 Supta Vajrasana

5.3.7.4.9 Ardha Navasana

5.3.7.4.10 Gomukhasana

5.3.7.4.11 Veerasana

5.3.7.4.12 Baddha Konasana

5.3.7.4.13 Janusirshasana

5.3.7.4.14 Upavista Konasana

5.3.7.4.15 Shashankasana

5.3.8 Pranayama

5.3.8.1 Bhastrika

5.3.8.2 Sheetkari

5.3.8.3 Sheetali

5.3.8.4 Anuloma Viloma

5.3.8.5 Ujjayi

5.3.8.6 Bhramari

5.3.9 Kriya

5.3.9.1 Jala neti

5.3.9.2 Sutra neti

5.3.9.3 Vamana dhauti

5.4 **Textbooks**

5.4.1 Basis and definitions of Yoga – Vivekananda Kendra

5.4.2 Asanas – Swami Kuvalyananda

5.4.3 The gospel of Buddha – Parul Caruso

5.4.4 The Gospel of Shri Ramakrishna – Mahendranatha Gupta

5.4.5 Complete works of Shri Aurobindo

5.4.6 Asanas, Pranayama, Bandhas, Mudras – Swami Satyananda Saraswati

5.4.7 Hatha YogaPradipika – Swami Svatmarama

5.4.8 Raja, Hatha, Jnana, BhaktiYoga – Swami Vivekananda

- **Basic research & Research Methodology- Every 2nd & 4th Saturday**

1. PATHOLOGY

1.1 Goals and Objectives

1.1.1 Goal:

The goal of teaching pathology to undergraduate students is to provide a comprehensive knowledge of the mechanisms and causes of disease, so that he/she is able to comprehend fully the natural history and clinical manifestations of disease.

1.1.2 Objectives:

1.1.2.1 Knowledge:

After the completion of the course, the student shall be able to:

1.1.2.1.1 Explain the structure and ultra-structure of a sick cell, mechanism of cell degeneration, cell death and repair and be able to correlate structural and functional alterations.

1.1.2.1.2 Describe the pathophysiological processes which govern the maintenance of homeostasis, mechanisms of their disturbance and the morphological and clinical manifestations associated with it;

1.1.2.1.3 Delineate the mechanisms and patterns of tissue response to injury such that he/she can appreciate the pathophysiology of disease processes and their clinical manifestations.

1.1.2.1.4 Correlate normal and altered morphology (gross and microscopic) of different organ systems in common diseases to the extent needed for understanding of disease processes and their clinical significance.

1.1.2.2 Skills:

After the completion of the course, the student shall be able to:

1.1.2.2.1 Elaborate on principles, procedures and interpretation of results of diagnostic laboratory tests.

1.1.2.2.2 Perform with proper procedure simple bed side tests on biological fluid samples like blood, urine etc.

1.1.2.2.3 Prepare investigation flow-charts for diagnosing and managing common diseases.

1.1.2.2.4 Identify biochemical and physiological disturbances in diseases.

1.1.2.3 Integration

At the completion of training, the student must be capable of integrating relationships between etiological factors such as social, economic and environmental in the natural history of common diseases in India.

1.2 Pathology – I General Pathology (Duration: 12 months)

Theory: 200 Practical: 100

1.2.1 History and Scope

1.2.2 Definition and various branches

1.2.3 Scientific study of disease and methodology

1.2.4 The cell and the reaction of cell, tissue and organ to injury

1.2.4.1 Structure and functions of cell

1.2.4.2 Causes and nature of cell injury

1.2.4.3 Toxic substances, physical agents and lack of nutrients

1.2.4.4 Infectious agents and parasites

1.2.4.5 Immune mechanisms and genetic defects

1.2.5 Reaction of cell to injurious agents

1.2.5.1 Lethal injury – necrosis and gangrene

1.2.5.2 Sub lethal injury

1.2.5.2.1 Cloudy swelling

1.2.5.2.2 Fatty changes in liver, heart and kidney

1.2.5.2.3 Glycogen infiltration and hyaline degeneration

1.2.5.2.4 Lipid degeneration Gaucher's disease

1.2.5.2.5 Mucoid degeneration

1.2.5.3 Excessive or abnormal accumulations – i) amyloid

1.2.5.4 Pathological calcification

1.2.6 Inflammation and Repair

1.2.6.1 Definition, classification and nomenclature

1.2.6.2 Acute inflammation

1.2.6.3 Vascular and cellular phenomenon, cells of exudates chemical mediators and tissue changes in acute inflammation, cardinal signs of acute inflammation

1.2.6.4 Fate, types and systemic effects of acute inflammation

1.2.7 Chronic Inflammation

1.2.7.1 Difference between acute and chronic inflammation

1.2.7.2 Definition of Granuloma

1.2.8 Wound healing

1.2.8.1 Restitution, regeneration and repair

1.2.8.2 Repair of epithelial and mesenchymal tissue

1.2.8.3 Primary union and secondary union

1.2.8.4 Mechanism involved and factors modifying repair process

1.2.9 Granulomas

1.2.9.1 Classification

1.2.9.2 Tuberculosis, genesis and fate of tubercle, primary and secondary tuberculosis

1.2.9.3 Definition, classification and pathology of leprosy

1.2.9.4 Acquired primary, secondary and tertiary stages syphilis

1.2.9.5 CNS syphilis, CVS syphilis and tertiary stages syphilis

1.2.9.6 Actinomycosis, maduramycosis, rhinosporidiosis

1.2.10 Fluid and Hemodynamic Changes (circulatory disturbances)

1.2.10.1 Hyperemia, congestion and hemorrhage

1.2.10.2 Thrombosis, embolism, DIC

1.2.10.3 Ischemia, infarction, and shock

1.2.11 Immunopathology

1.2.11.1 Basic pathological mechanism in autoimmune disorders

1.2.11.2 Concept of immunodeficiency disorders

1.2.11.3 Pathology of AIDS

1.2.11.4 Growth disorders and definitions

1.2.12 Growth disorders

1.2.12.1 Definition of agenesis, aplasia, atrophy, hyperplasia, hypertrophy, hypoplasia, metaplasia

1.2.12.2 Concept of dysplasia, anaplasia and carcinoma in-situ

1.2.13 Neoplasia

1.2.13.1 Definition, classification and nomenclature

1.2.13.2 Characteristic features of benign and malignant tumors

1.2.13.3 Route of spread of malignant tumors

1.2.13.4 Grading and staging of cancers and pre-cancerous conditions

1.2.13.5 Carcinogenesis and carcinogens

1.2.13.6 Effect of tumor on host, and effect of host on tumors

1.2.13.7 Laboratory diagnosis of cancer – Biopsy, exfoliative cytology, prognostic prediction in cancer

1.2.13.8 Description of common tumors like – Fibroma, Lymphoma, Lipoma, Angioma, Liomyoma, Fibrosarcoma, Lymphosarcoma, Liposarcoma, Angiosarcoma, and Leiomyosarcoma

1.2.13.9 Embryonal tumors like teratoma and retinoblastoma

1.2.14 Mineral and Pigment Metabolism

1.2.14.1 Pathology of melanin pigment

1.2.14.2 Pathology of hemoglobin and its derivatives

1.2.14.3 Hemosiderosis and hemochromatosis

1.2.15 Genetic disorders

1.2.15.1 Klinefelter’s Syndrome, Turner’s Syndrome, Down’s Syndrome

1.3 **Pathology – II (Duration: 12 months)**

1.3.1 Disorders of RBC

1.3.1.1 Definition, morphologic and etio-pathologic classification of anemia

1.3.1.2 Iron deficiency anemia, B12 and folate deficiency anemia, sideroblastic anemia, post-hemorrhagic anemia

1.3.1.3 Concept and classification of hemolytic anemia

1.3.1.4 Acquired hemolytic anemia and aplastic anemia

1.3.1.5 Polycythemia

1.3.1.6 Laboratory investigations in anemia

1.3.2 Disorders of WBC

1.3.2.1 Leukopenia, Leukocytosis

1.3.2.2 Leukemia, Agranulocytosis and Tropical eosinophilia

1.3.3 Coagulation and bleeding disorders

1.3.3.1 Structure, function and pathology of platelets

1.3.3.2 Definition and classification of blood dyscrasias

1.3.3.3 Laboratory investigations in bleeding disorders

1.3.4 Diseases of cardiovascular system

1.3.4.1 Arteriosclerosis and atherosclerosis

1.3.4.2 Aneurysm

1.3.4.3 Vasculitis and thromboangitis obliterans

1.3.4.4 Rheumatic heart disease, endocarditis, myocardial infarction

1.3.4.5 Congenital heart diseases, pericarditis

1.3.4.6 Congestive cardiac failure

1.3.5 Diseases of Respiratory system

1.3.5.1 Lobar pneumonia, bronchopneumonia, pulmonary tuberculosis

1.3.5.2 Atelectasis, bronchiectasis and pneumoconiosis

1.3.5.3 Chronic Obstructive Pulmonary Diseases (COPD)

1.3.5.4 Bronchial asthma, chronic bronchitis

1.3.5.5 Acute respiratory distress syndrome (ARDS)

1.3.5.6 Tumors of lung and pleura

1.3.6 Diseases of gastrointestinal system

1.3.6.1 Pleomorphic adenoma of salivary gland

1.3.6.2 Barrett's esophagus

1.3.6.3 Gastritis and peptic ulcer and tumors of stomach

1.3.6.4 Inflammatory bowel diseases – Crohn's disease, ulcerative colitis, typhoid ulcer, tumors of small intestine

1.3.6.5 Megacolon and tumors of colon

1.3.6.6 Malabsorption syndrome, tropical sprue and celiac tuberculosis

1.3.7 Diseases of liver, biliary tract and pancreas

1.3.7.1 Liver function test and hepatic failure, viral hepatitis

1.3.7.2 Cirrhosis of liver, tumors of liver

1.3.7.3 Cholecystitis, gall stones

1.3.7.4 Acute pancreatitis, diabetes mellitus

1.3.7.5 Cystic fibrosis (mucoviscidosis)

1.3.7.6 Liver abscess and alcoholic liver disease

1.3.7.7 Indian childhood cirrhosis

1.3.8 Diseases of Kidney

1.3.8.1 Renal function tests, renal failure, polycystic kidney

1.3.8.2 Acute glomerulonephritis, crescentric glomerulonephritis, membranous glomerulonephritis, nephritic syndrome

1.3.8.3 Chronic glomerulonephritis, acute tubular necrosis

1.3.8.4 Pyelonephritis, kidney in hypertension

1.3.8.5 Urolithiasis, tumors of kidney and pelvis

1.3.9 Diseases of Male Genital System

1.3.9.1 Orchitis and testicular tumors

1.3.9.2 Nodular hyperplasia of prostate, carcinoma of prostate

1.3.9.3 Carcinoma of penis and lesions of penis

1.3.10 Diseases of Female Genital System

1.3.10.1 Endometrial hyperplasia, adenomyosis and endometriosis

1.3.10.2 Carcinoma of cervix, tumors of ovary

1.3.10.3 Pelvic inflammatory diseases

1.3.10.4 Carcinoma and other diseases of vulva

1.3.11 Diseases of Breast

1.3.11.1 Fibrocystic disease and tumors of breast

1.3.11.2 Gynecomastia

1.3.12 Endocrine pathology

1.3.12.1 Pituitary, acromegaly, hypothyroidism and Grave's disease

1.3.12.2 Thyroiditis, tumors of thyroid and thyroid function tests

1.3.12.3 Hypoparathyroidism and hyperparathyroidism

1.3.12.4 Hyperplasia and adenoma of parathyroid

1.3.12.5 Adrenal gland, Addison's disease, Cushing's syndrome

1.3.12.6 Pheochromocytoma, neuroblastoma

1.3.13 Musculoskeletal pathology

1.3.13.1 Osteomyelitis and osteoporosis

1.3.13.2 Rickets and osteomalacia

1.3.13.3 Osteitis fibrosa cystic and Paget's disease, fibrous dysplasia

1.3.13.4 Tumors of bone

1.3.13.5 Rheumatoid arthritis, Gout

1.3.13.6 Myasthenia gravis and progressive muscular dystrophy

1.3.14 Diseases of Nervous System

1.3.14.1 Meningitis, tumors of CNS

1.3.14.2 Tumors of peripheral nerves

1.3.14.3 Encephalitis

1.3.15 Diseases of Lymph nodes and Spleen

1.3.15.1 Lymphadenopathy

1.3.15.2 Malignant lymphomas and splenomegaly

1.3.16 Pathology of skin

1.3.16.1 Squamous cell carcinoma, basal cell carcinoma

1.3.16.2 Malignant melanoma

1.3.16.3 Warts, molluscum contagiosum

1.3.16.4 Superficial and deep fungal diseases

1.4 **Practical**

1.4.1 Hematology

1.4.1.1 Blood groups (A B O system)

1.4.1.2 Estimation of hemoglobin

1.4.1.3 Enumeration of RBCs (RBC count)

1.4.1.4 Total leucocyte count (Total count)

1.4.1.5 Differential leucocyte count (DC)

1.4.1.6 Peripheral smear staining and reporting

1.4.1.7 Absolute eosinophil count

1.4.1.8 Demonstration of

1.4.1.8.1 Hemograms in anemia

1.4.1.8.1.1 Iron deficiency anemia

1.4.1.8.1.2 Macrocytic anemia

1.4.1.8.1.3 Microcytic anemia

1.4.1.8.1.4 Hemolytic anemia

1.4.1.8.2 Hemograms in leukemias

1.4.1.8.2.1 Acute types

1.4.1.8.2.2 Chronic types

1.4.1.9 Slide study of

1.4.1.9.1 Acute myeloid leukemia

1.4.1.9.2 Chronic myeloid leukemia

1.4.1.9.3 Chronic lymphatic leukemia

1.4.2 Clinical pathology

1.4.2.1 Urine analysis

1.4.2.2 Semen analysis

1.4.2.3 Pregnancy tests

1.4.2.4 Liver function tests

1.4.2.5 Fractional test meal

1.4.2.6 Glucose tolerance test

1.4.2.7 CSF analysis

1.5 **Textbooks**

1.5.1 Pathological basis of disease – Robbins, Cotran and Kumar

1.5.2 Textbook of Pathology – NC. Dey

1.6 **Reference Books**

1.6.1 Textbook of Pathology – Anderson

1.6.2 Systemic Pathology – Symmers

1.6.3 Medical Laboratory Technology – Ramnik Sood

2. MICROBIOLOGY

2.1 Goals and Objectives

2.1.1 Goal:

The goal of teaching microbiology to undergraduate students is to provide a comprehensive knowledge of the natural history, mechanisms and causes of infectious disease, including etiology, pathogenesis, laboratory diagnosis, treatment and control of diseases in the community.

2.1.2 Objectives:

2.1.2.1 **Knowledge:**

After the completion of the course, the student shall be able to:

2.1.2.1.1 Remember and recall all the infectious micro-organisms of the human body and host-parasite relationship

2.1.2.1.2 Describe parasitic micro-organisms (viruses, fungi, bacteria, parasites) with the pathogenesis of the diseases they cause.

2.1.2.1.3 Enumerate and illustrate sources and modes of transmission, including insect vectors, of pathogenic and opportunistic organisms.

2.1.2.1.4 Describe the pathways and mechanisms of immunity to infection

2.1.2.1.5 Acquire knowledge about different vaccines that are available for the prevention of communicable diseases.

2.1.2.1.6 Effectively use sterilization and disinfection to control and prevent nosocomial and community acquired infections.

2.1.2.1.7 Order laboratory investigations for bacteriological examination of food, water and air.

2.1.2.2 **Skills:**

After the completion of the course, the student shall be able to:

2.1.2.2.1 Prescribe and interpret laboratory investigations for diagnosis of communicable diseases and identify infectious agents by clinical manifestations.

2.1.2.2.2 Perform common bed-side tests to detect and identify pathogenic agents, such as blood film for malaria, filaria, gram stain and Acid-Fast Bacilli (AFB) staining and stool sample for ova cyst, etc.

2.1.2.3 **Integration**

2.1 At the completion of training, the student must be knowledgeable about clinical, therapeutic and preventive aspects of diseases most prevalent in India.

2.2 **Theory (Duration: 12 months)**

Total hours: 200 (Theory: 150 Practical: 50)

2.2.1 Infection and a brief description of Nosocomial infection

2.2.2 Immunology

2.2.2.1 Reticuloendothelial system, components and functions of the innate and adaptive immunity

2.2.2.2 Role of T and B lymphocytes

2.2.2.3 Induction of immune response

2.2.2.4 Cell-mediated immune response

2.2.2.5 Immunoglobulin structure and functions

2.2.2.6 Humoral immune response

2.2.2.7 Fate of antigen antibody complex

2.2.2.8 Complement system

2.2.2.9 Generation of antibody diversity

2.2.2.10 Hypersensitivities

2.2.2.11 Immunoregulation, autoimmunity, tolerance

2.2.2.12 HLA, disease association and transplantation

2.2.2.13 Serological and Immunological techniques, application in medicine (vaccines, immunotherapy, immunoassays and immune diagnosis)

2.2.2.14 Antibacterial Susceptibility testing

2.2.3 Cell as structural unit of life

2.2.4 Classification of living organisms

2.2.5 Classification of microorganisms

2.2.6 Distinctive characteristics of major groups of microorganisms

2.2.6.1 Protozoa

2.2.6.2 Algae

2.2.6.3 Fungi

2.2.6.4 Bacteria

2.2.6.5 Viruses

2.2.7 General bacteriology

2.2.7.1 Bergey's manual of systemic bacteriology

2.2.7.1.1 Gram positive eubacteria: Cocci, endospore forming bacteria, regular shaped rods, irregular shaped rods, mycobacteria, actinomycetes, mycoplasmas

2.2.7.1.2 Gram negative eubacteria: Spirochetes, microaerophilia curved bacteria, aerobic rods and Cocci, facultative rods, anaerobes, rickettsias and Chlamydias

2.2.7.2 Morphology, structure and staining

2.2.7.3 Growth and nutrition of bacteria

2.2.7.4 Sterilization and disinfections

2.2.7.5 Culture media and methods

2.2.7.6 Identification of bacteria

2.2.7.6.1 Phenotypic characteristics – morphology, resistance, metabolism, biochemical test, antigenic structure, typing of bacterial strain, pathogenicity of tests, serological tests, molecular diagnostics

2.2.7.6.2 Bacterial genetics – plasmids, genetic variation

2.2.7.6.3 Mechanism of bacterial pathogenesis

2.2.7.6.4 Bacteriophage

2.2.7.6.5 Systemic bacteriology - Streptococcus, Staphylococcus, Pneumococcus, Gonococci, Meningococcus, Corynebacterium, Clostridium, Hemophilus, Mycobacterium, Spirochetes, Bordetella, Chlamydia

2.2.7.6.6 Virology- General properties of viruses and their diagnosis.
Study of Herpes, Adenovirus, Picornavirus, Hepatitis virus, Pox virus, Rabies, HIV, Poliovirus

2.2.7.6.7 Parasites- Protozoa- Entamoeba and Plasmodium

Helminthology---Ancylostoma, Ascaris, Taenia, Wuchereria

2.2.7.6.8 Mycology—General characteristics and methods used for study and diagnosis of fungal infections
Superficial mycoses, Opportunistic mycoses
Systemic mycoses

2.2.7.7 Bacteriology of water

2.3 **Practical**

2.3.1 Demonstration of culture media, demonstration of sterilization techniques

2.3.2 Systemic – identification of the pathogen from the given clinical material based on staining, property, cultural characters, biochemical and serological tests

2.3.3 Immunology – interpretation of given immunological test

2.3.4 Agglutination – slide, tube and passing agglutination precipitation – VDLR, Elisa

2.3.5 Parasitology – stool examination

2.3.6 Blood smear for malarial parasite and others for identification and interpretation

2.4 Textbooks

2.4.1 Textbook of microbiology – R Ananthanarayana and CK Jayakumar

2.4.2 Parasitology – Jayaram Panicker

2.4.3 Bacteriology – Dey

2.4.4 Textbook of microbiology – Chakravarthy

2.4.5 Immunology and microbiology – Gupta

2.5 Reference Books

2.5.1 Parasitology – Chaterjee

2.5.2 Practical microbiology – R Cruick Shank

2.5.3 Clinical microbiology – Bailey & Scott

2.5.4 Medical Laboratory – Manual for tropical countries – Monica Cheesbrough

3. COMMUNITY MEDICINE

3.1 Goals and Objectives

3.1.1 Goal:

The goal of teaching Community Medicine to undergraduate students is to prepare them to function as community and first level physicians in accordance with the institutional goals.

3.1.2 Objectives:

3.1.2.1 Knowledge:

After completion of the course, the student shall be able to:

3.1.2.1.1 Describe the health care delivery system including rehabilitation of the disabled in the country.

3.1.2.1.2 Describe the National Health Programs with particular emphasis on maternal and child health programs, family welfare planning and population control.

3.1.2.1.3 List epidemiological methods and describe their applications to communicable and non-communicable diseases in the community or hospital situation.

3.1.2.1.4 Apply bio-statistical methods and techniques.

3.1.2.1.5 Delineate the demographic pattern of the country and appreciate the roles of the individual family, community and socio-cultural environment in health and disease.

3.1.2.1.6 Explain the health information systems.

3.1.2.1.7 Enunciate the principles and components of primary health care and national policies to achieve the goal of 'Health administration, Health education in relation to community'.

3.1.2.1.8 Able to plan a Health Program and able to evaluate a Programme.

3.1.2.1.9 Able to describe principles of organization.

3.1.2.2 Skills:

After the end of the course, the student should be able to:

3.1.2.2.1 Use epidemiology as a scientific tool for making national decisions relevant to community and individual patient intervention.

3.1.2.2.2 Collect, Analyze, interpret and present simple community and hospital-based data.

3.1.2.2.3 Diagnose and manage common health issues and emergencies at the individual family and community levels with existing healthcare resources, respecting socio-cultural beliefs.

3.1.2.2.4 Diagnose and manage maternal and child health problems and conduct family planning counseling and community programs keeping in mind national priorities.

3.1.2.2.5 Diagnose and manage common nutritional problem at individual and community level.

3.1.2.2.6 Design, implement and evaluate health education program using simple audio-visual aids

3.1.2.2.7 Participate with team members in organizing and implementing health care programs.

3.1.2.2.8 Conduct group meetings, give talks on medical issues.

3.1.2.3 Integration:

Develop capabilities to form a synthesis between cause of illness in the environment or community and individual health and respond with leadership qualities to institute remedy for the same.

3.2 **Theory (Duration: 12 months)**

Total hours: 250 (Theory: 150 Practical: 100)

3.2.1 Man, and Medicine: Towards Health for All

3.2.2 Concepts of Health

3.2.2.1 Concept

3.2.2.2 Definitions

3.2.2.3 Dimensions

3.2.2.4 Determinants

3.2.2.5 Positive health

3.2.2.6 Concept of wellbeing

3.2.2.7 Responsibility towards health

3.2.2.8 Health development and its indicators

3.2.2.9 Health science philosophies

3.2.3 Concept of Disease

3.2.3.1 Concepts of causation

3.2.3.2 Natural history of disease

3.2.4 Concepts of control and prevention

3.2.5 Modes of intervention

3.2.6 Population medicine

3.2.7 International classification of diseases

3.2.8 Principles of epidemiology and epidemiologic methods

3.2.8.1 Definition, basic measurements in epidemiology

3.2.8.2 Epidemiological methods – descriptive, analytical and experimental epidemiology

3.2.8.3 Uses of epidemiology

3.2.8.4 Dynamics of disease transmission

3.2.8.5 Disease prevention and control

3.2.8.6 Investigation of an Epidemic

3.2.9 Screening of diseases: Concepts, Uses, Criteria for screening, sensitivity & specificity

3.2.10 Epidemiology of communicable diseases

3.2.10.1 Respiratory infections – smallpox, varicella, measles, rubella, mumps, influenza, diphtheria, pertussis, tuberculosis, acute respiratory tract infection (ARTI)

3.2.10.2 Intestinal infections – polio, viral hepatitis, cholera, acute diarrheal diseases, typhoid, food poisoning, amoebiasis, ascariasis, ancylostomiasis, taeniasis

3.2.10.3 Arthropod – borne infections – yellow fever, Japanese encephalitis, malaria, filarial

3.2.10.4 Surface infections – rabies, trachoma, tetanus, leprosy, STD, AIDS

3.2.11 Epidemiology of non-communicable diseases – cancer, cardiovascular diseases, obesity, blindness, accidents, hypertension, stroke, rheumatic heart disease

3.2.12 Demography and Family Planning – Demographic cycle, population trends, fertility related statistics, health aspects of family planning, contraceptive methods and delivery system, National family welfare program.

3.2.13 Preventive medicine in Obstetrics, Pediatrics and Geriatrics – Antenatal, Intra natal, Postnatal care, Low birth weight, infant feeding, growth and development, growth chart, under-fives clinic, national health policy, indicators of MCH care, school health services, behavioral problems, geriatrics, Anganwadi ICDS programs.

3.2.14 Environmental health and occupational health: Purification of water and water quality standards, air, ventilation, lighting, noise, radiation, air temperature and humidity, housing, solid wastes disposal and control, excretory disposal, water carriage system, modern sewage treatment, entomology-mosquito, housefly, lice, itch mite, Cyclopes, rat flea, rodents, insecticides-hazards, diseases, pre-placement examination, measures for general health, protection of workers, prevention of occupational hazards

3.2.15 Basic Medical Statistics: Census, Vital events, legislation, SRS, notification of diseases, measures of dispersion and centering, sampling, tests of significance, correlation and regression

3.2.16 Health education and communication: Objectives, principles, aids, practice of Health education, planning and evaluation

3.2.17 Health planning – Management – International health organizations: Planning cycle, management methods and techniques, national health policy, health planning in India, five-year plans, health systems in India, five-year plans, health systems in India – at center, state and district levels, panchayat raj, rural development schemes

3.2.18 Healthcare of community – Health System and National Programs: Levels of healthcare, Health for All, primary healthcare, healthcare delivery, health problems, healthcare services and systems, voluntary health agencies, national health programs

3.2.19 Nutrition and Health: Classification of food, vitamin, mineral, carbohydrate, protein, fat, energy balance, balanced diet, nutritional problems in public health, low birth N+PEM, xerophthalmia, nutritional anemia, IDPs, endemic fluorosis, lathyrism, assessment of nutritional status, nutritional surveillance, social aspects of nutritional food hygiene, food-borne disease.

3.2.20 International health agencies: WHO, UNICEF, RED CROSS

3.2.21 Voluntary health agencies.

3.3 **Practical**

3.3.1 Posting at any PHC, CHC, RHC or district hospital for National Immunization Program

3.3.2 Nutritional Assessment Surveys

3.3.3 1 day workshop or awareness program on AIDS with NACO

3.3.4 Posting at Blood donation camp

3.3.5 Field visits

3.3.5.1 Anganwadis

3.3.5.2 PHC / CHC / RHC / District hospital and understanding description of existing healthcare services

3.3.6 A study on health-related problem in the community

3.3.7 Family Health Advisory Service

3.3.7.1 To study the family structure & health status of individual members with reference to

3.3.7.1.1 General health status

3.3.7.1.2 Socio-economic status

3.3.7.1.3 Nutritional status

3.3.7.1.4 Environmental

3.3.7.1.5 Immunization status

3.3.7.1.6 Family welfare planning status

3.3.8 Health Practices in 4 conditions

3.3.8.1 Pulmonary Tuberculosis

3.3.8.1.1 Index case: occupation, literacy, social status etc

3.3.8.1.2 Preventive measures for other family members

3.3.8.1.3 Health education

3.3.8.2 Antenatal Care

3.3.8.2.1 Literacy of the family and woman

3.3.8.2.2 Customs – social / religious during pregnancy, delivery, lactation

3.3.8.2.3 Dietary habits: knowledge, aptitude and practices

3.3.8.3 Antenatal high-risk care

3.3.8.3.1 Health education, family planning advice

3.3.8.4 Protein energy malnutrition

3.3.8.4.1 Socio-economic status of family

3.3.8.4.2 Infant feeding and weaning practices

3.3.8.4.3 Social customs regarding diet for children

3.3.9	Insecticides	-	10+ models
3.3.10	Universal Immunization Program	-	10+ models
3.3.11	Communicable diseases	-	10+ models
3.3.12	Insect-borne diseases	-	10+ models
3.3.13	Microscope slides	-	10+ models
3.3.14	Environment and Sanitation	-	10+ models

3.3.15 Statistical charts

3.3.16 Field visits

3.3.16.1 Rural health Centers

3.3.16.2 Sewage Disposal Plant

3.3.16.3 Water Filtration Plant

3.3.16.4 Nature Cure Hospitals

3.3.16.5 Yoga Institutes

3.3.16.6 Nutritional Assessment surveys

3.3.16.7 Sanatoriums

3.3.16.8 NACO programs etc

3.4 Textbooks

3.4.1 Textbook of Preventive and Social Medicine – JE Park & K Park

3.4.2 Textbook of Preventive and Social Medicine – BK Mahajan& MC Gupta

3.5 Reference Books

3.5.1 Preventive medicine – Ghosh

3.5.2 Preventive medicine – Yeshpal

3.6 Reference Papers

3.6.1 WHO Program papers

3.6.2 National Health Program Papers

3.6.3 Voluntary health Program Papers

3.6.4 Red Cross Program papers

3.6.5 UNICEF Program Papers

4. YOGA PHILOSOPHY

5.1 Goals and Objectives

5.1.1 Goal:

The goal of teaching Yoga philosophy to undergraduate students is to understand the intricacies of Yoga as a philosophy, its relation to ancient texts, other religious thoughts like Buddhism, with reference to nyaya, vasistha, samkhya, mimamsa, Vedanta and PatanjaliYogasutras.

5.1.2 Objectives:

5.1.2.1 **Knowledge:**

After the completion of the course, the student shall be able to:

5.1.2.1.1 Explain the basic understanding of Yoga as a philosophy

5.1.2.1.2 Describe the various schools of philosophy which had an influence on Yogic text like buddhism, samkhya, mimamsa etc.

5.1.2.1.3 Comprehend the concept of brahman according to vedanta

5.1.2.2 **Skills:**

After the completion of the course, the student shall be able to:

5.1.2.2.1 Perform and demonstrate various asanas, pranayamas, kriyas and meditations.

5.1.2.2.2 Describe various philosophies of Yoga and apply them therapeutically, relating to a patient's life situation or personality.

5.1.2.3 **Integration**

4.1 At the completion of training, the student should be able to comprehend the basic principles of Yoga and therapeutically apply them in his/her professional practice.

4.2 **Theory (Duration: 12 months)**

Total hours: 300 (Theory: 150 Practical: 150)

4.2.1 Yoga, its definition, its basis, its relation to philosophy and its application.

4.2.2 Ancient roots of Yoga – literature review on reference to Yoga in Upanishads, Vedas, Smritis and Puranas.

4.2.3 Buddhism – 4 main schools of Buddhist philosophy.

4.2.4 Nyaya – Nature of physical world, individual soul, liberation and concept of supreme soul in Indian philosophy, theory of Body, Mind, Life and Soul and its philosophical background.

4.2.5 Vaisheshika – Category of substance – Nava dravyas, category of quality – 24 gunas.

4.2.6 Sankhya – theory of cause and effect; Prakriti, Purusa; Process of evolution of universe; concept of liberation; Practical teachings of Sankhya.

4.2.7 Mimamsa – Major teachings of Mimamsa system; selfless action, nonattachment, self-control, self-discipline, daily schedule for psychophysical wellbeing, social awareness, sense of equality, unity with diversity, selectiveness.

4.2.8 Vedanta – Concept of Atman, Brahma, Maya, Universe, God; the self and human life; liberation and the means of attaining it.

4.2.9 PatanjaliYogaSutras – Samadhi Pada, SadhanaPada.

4.2.10 AshtangaYoga (8 limbs of Yoga - Patanjali).

4.2.11 Spiritual values of pranayama and kriyas, their methods, importance, rules and regulations, difference between breathing exercises and Pranayama.

4.2.12 Research in Yoga Philosophy

4.2.13 Recent advances in Yoga and Yoga philosophy

4.2.14 **Practical**

4.2.15 Entire first year syllabus.

4.2.16 Asanas

4.2.16.1 Sitting

4.2.16.1.1 Siddhasana

4.2.16.1.2 Bhadrasana

4.2.16.1.3 Samasana

4.2.16.1.4 Swastikasana

4.2.16.1.5 Simhasana

4.2.16.1.6 Ardha Matsyendrasana

4.2.16.1.7 Kurmasana

4.2.16.1.8 Mayurasana

4.2.16.1.9 Sirshasana

4.2.16.1.10 Akarna Dhanurasana

4.2.16.1.11 Parivarta Janusirshasana

4.2.16.1.12 Garbhasana

4.2.16.1.13 Tolangulasana

4.2.16.1.14 Badhakonasana

4.2.16.1.15 Upavistakonasana

4.2.16.2 Prone

4.2.16.2.1 Shalabhasana – 2 and 3

4.2.16.3 Supine

4.2.16.3.1 Yoganidrasana

4.2.16.3.2 Karnapeedasana

4.2.16.3.3 Naukasana

4.2.16.4 Standing

4.2.16.4.1 Ardha Katichakrasana

4.2.16.4.2 Parshvakonasana

4.2.16.4.3 Suptakonasana

4.2.16.4.4 Padangushtasana

4.2.16.4.5 Garudasana

4.2.16.4.6 Padahastasana (Advanced)

4.2.17 Pranayama

4.2.17.1 Surya anulomaviloma

4.2.17.2 Ujjayi

4.2.17.3 Bhramari

4.2.18 Kriya

4.2.18.1 VastraDhauti

4.2.18.2 Trataka – Jyoti&Bindu

4.2.18.3 Kapalabhati

4.3 **Textbooks**

4.3.1 Basis and definitions of Yoga – Vivekananda Kendra

4.3.2 Asanas – Swami Kuvalyananda

4.3.3 The gospel of Buddha – Parul Caruso

4.3.4 The Gospel of Shri Ramakrishna – Mahendranath Gupta

4.3.5 Complete works of Shri Aurobindo

4.3.6 Asanas, Pranayama, Bandhas, Mudras – Swami Satyananda Saraswati

4.3.7 Hatha YogaPradipika – Swami Svatmarama

4.3.8 Raja, Hatha, Jnana, Bhakti Yoga – Swami Vivekananda

5. BASIC PHARMACOLOGY

5.1 Goals and Objectives

5.1.1 Goal:

5.1.1.1 The goal of teaching Pharmacology to undergraduate students is to provide a comprehensive knowledge of scientific, evidence-based treatment of diseases through drug administration.

5.1.2 Objectives:

5.1.2.1 Knowledge:

After the completion of the course, the student shall be able to:

5.1.2.1.1 Illustrate pharmacokinetics and pharmacodynamics of essential and common drugs

5.1.2.2 Skills:

After the completion of the course, the student shall be able to:

5.1.2.2.1 Be proficient in describing pharmacokinetics and pharmacodynamics of essential and common drugs

5.1.2.2.2 Observe medical ethics in his professional practice

5.1.2.3 Integration

At the completion of training, the student must be trained in medico legal responsibilities of physicians at all levels of health care as well as scientifically based clinical toxicology, being skilled in allied disciplines like Pathology, Radiology, Forensic Sciences, Hospital Administration, Medicine, Pharmacology, etc.

5.2 Theory (Duration: 12 months)

Total hours: (Theory 100 +practical 50)

5.2.1 General Pharmacology

5.2.1.1 Nature and sources of drugs

5.2.1.2 Routes of administration

5.2.1.3 Absorption and bioavailability of a drug – factors affecting drug absorption and its bioavailability

5.2.1.4 Distribution of a drug in the body

5.2.1.4.1 Plasma concentration

5.2.1.4.2 Drug storage

5.2.1.4.3 Placental transfer

5.2.1.5 Fate of the drug

5.2.1.6 Drug excretion

5.2.1.7 Drug receptors

5.2.1.8 Mechanism of action of a drug – types of drug action

5.2.1.9 Adverse reaction to drug

5.2.1.10 Drug toxicity in man –

5.2.1.10.1 drug intolerance

5.2.1.10.2 hemopoietic toxicity

5.2.1.10.3 hepatotoxicity

5.2.1.10.4 nephrotoxicity

5.2.1.10.5 abnormalities of taste and smell

5.2.1.10.6 behavioral toxicity

5.2.1.10.7 production of a disease

5.2.1.10.8 electrolyte disturbances

5.2.1.10.9 endocrine disturbances

5.2.1.10.10 skin toxicity

5.2.1.10.11 carcinogenesis

5.2.1.10.12 teratogenicity

5.2.1.10.13 drug dependence

5.2.1.11 Factors modifying the effects of a drug

5.2.1.12 Role of a placebo

5.2.2 Brief description of the following drugs

(Their mode of action, dosage, adverse reaction, the method of tapering their dosage, including the adverse effects with the abrupt stoppage of their use)

5.2.3 Drugs acting on the CNS

5.2.3.1 General sedatives

5.2.3.2 Anticonvulsant drugs

5.2.3.3 Opioid and Non-Opioid analgesics

5.2.3.4 Analgesics, antipyretics and non-steroidal anti-inflammatory drugs (NSAID)

5.2.3.5 CNS stimulants – Xanthine alkaloids

5.2.3.6 Psychopharmacology

5.2.3.6.1 Anti-anxiety drugs – Meprobamate, Benzodiazepines, Chlormethiazole

5.2.3.6.2 Anti-depressant drugs – Classification, actions, adverse reaction (monoamine oxidase inhibitors, tricyclic compounds, carbamazepine, lithium)

5.2.3.6.3 Psychotogenic drugs – LSD, Mescaline, Cannabis

5.2.3.7 Local Anesthetics – adverse reactions

5.2.3.8 Drug action on ANS

5.2.3.8.1 Skeletal muscle relaxants – Diazepam, Baclofen, Dantrolene

5.2.3.8.2 Anti-Parkinsonian drugs – Levodopa, Amantadine

5.2.3.9 Biogenic Amines and Polypeptides

5.2.3.9.1 Histamine and Antihistamine drugs

5.2.3.9.2 Angiotensin, Kinins, Leukotrienes, Cytokines & PGs

5.2.3.10 Drugs used in Respiratory Disorders

5.2.3.10.1 Expectorants, Central cough suppressants, antitussives, mucolytic agents

5.2.3.10.2 Pharmacotherapy of bronchial asthma and rhinitis

5.2.3.10.2.1 Drug therapy during an acute attack

5.2.3.10.2.2 Prevention of acute attacks

5.2.3.10.2.3 Treatment of acute severe asthma

5.2.3.10.2.4 Treatment of acute respiratory failure

5.2.3.10.2.5 Treatment of chronic persistent asthma

5.2.3.10.2.6 Drug therapy of rhinitis

5.2.3.11 Cardiovascular drugs

5.2.3.11.1 Digitalis

5.2.3.11.2 Pharmacotherapy of cardiac arrhythmias – Sodium channel blockers, beta blockers, potassium channel blockers, calcium channel blockers

5.2.3.11.3 Pharmacotherapy of Hypertension – Clonidine, alpha methyldopa, Guanethidine, Reserpine, Phentolamine etc.

5.2.3.12 Drugs acting on Blood and blood forming organs

5.2.3.12.1 Drugs effective in iron deficiency anemia

5.2.3.12.2 Treatment of acute iron poisoning

5.2.3.13 Water, Electrolytes and drugs affecting Renal functions

5.2.3.13.1 Nutritional supplementation therapy

5.2.3.13.2 Diuretic and Anti-diuretic drugs

5.2.3.14 Drugs used in GIT disorders

5.2.3.14.1 Appetizers, Digestants, Carminatives, Appetite suppressants and agents lowering serum lipid

5.2.3.14.2 Emetics, drug therapy of vomiting and diarrhea

5.2.3.14.3 Pharmacotherapy of constipation

5.2.3.14.4 Pharmacotherapy of peptic ulcer

5.2.3.15 Chemotherapy

5.2.3.15.1 Sulfonamides, Cotrimoxazoles, Nitrofurans

5.2.3.15.2 Penicillin, antibiotics effective against gram positive and negative organisms

5.2.3.15.3 Tetracyclines, chloramphenicol and antifungal agents

5.2.3.15.4 Chemotherapy of UTI, STD, Tuberculosis, Leprosy, Malaria, Amoebiasis, Viral infections, Helminthiasis, Malignancy

5.2.3.15.5 Antiseptics and Disinfectants

5.2.3.16 Drugs used in Endocrine disorders

5.2.3.16.1 Thyroid and antithyroid drugs

5.2.3.16.2 Insulin and oral antidiabetic drugs

5.2.3.16.3 Adrenal cortical steroids

5.2.3.16.4 Gonadotropins, estrogens, progestins

5.2.3.16.5 Antifertility agents and ovulation including drugs

5.2.3.16.6 Drug therapy in lipidemia

5.2.3.16.7 Drug therapy in obesity

5.2.3.17 Therapeutic gases – oxygen carbon dioxide

5.2.3.18 Vitamins

5.2.3.19 Immunotherapy, immuno-suppressants and immune stimulants

NOTE: All the drugs mentioned in the syllabus are strictly for understanding drug reactions and NOT to be prescriptive in nature. Students, after graduation are not expected to prescribe any of the above-mentioned medication.

5.3 Textbooks

5.3.1 Pharmacology and Pharmacotherapeutics – RS Satoskar, SD Bhandarkar, SS Ainapure

5.3.2 Essentials of Medical Pharmacology – KD Tripathi

5.3.3 Pharmacology – Rang and Dale

6. Colour Therapy and Magneto therapy

6.1 Goals and Objectives

6.1.1 Goal:

The goal of teaching Color therapy and Magneto biology to undergraduate students is to provide them with comprehensive understanding of philosophy, science and modes of applications of colors and magnets in preventive, curative and rehabilitative therapy.

6.1.2 Objectives:

6.1.2.1 Knowledge:

After the completion of the course, the student shall be able to:

6.1.2.1.1 Demonstrate basic understanding of principles along which colors and magnets can be used as therapeutic agents, along with history of therapeutic uses of colors and magnets.

6.1.2.1.2 Understand bio-magnetism, electro-magnetism, properties of magnets, mechanisms of action of magnets on the human body, magnetic overload, charging, modes of application, etc. and apply this knowledge to therapeutically use magnets.

6.1.2.1.3 Be aware of the contraindications and harmful effects of colours and magnets.

6.1.2.1.4 Illustrate classification of colors, physics of light, electromagnetic spectrum, pathway of vision, human aura, chakras, heliotherapy, color breathing, chromo charging, and latest research, applying the same to disease management.

6.1.2.2 Skills:

After the completion of the course, the student shall be able to:

6.1.2.2.1 Diagnose various diseases and disorders of the body and mind using the principles of color diagnosis.

6.1.2.2.2 Outline and implement a plan of treatment using colors and magnets as therapeutic tools

6.1.2.2.3 Evaluate the therapeutic values of colors and magnets in treatment of various diseases

6.1.2.2.4 Utilize latest research finding in improving his/her professional practice

6.1.2.3 Integration

At the completion of training, the student should be able to comprehend the basic principles of Color therapy and Magneto biology and therapeutically apply them in his/her professional practice.

6.2 Theory (Duration: 12 months)

Total hours: 150 (Theory: 100 Practical: 50)

6.2.1 Magneto biology

6.2.1.1 Definitions of magneto therapy

6.2.1.2 Historical highlights

6.2.1.3 Vedic references related to magneto therapy

6.2.1.4 Biomagnetism

6.2.1.4.1 Effects on plants, birds and animals.

6.2.1.4.2 Effects on mankind

6.2.1.5 Principles electromagnetism

6.2.1.6 Types of magnets

6.2.1.6.1 Natural

6.2.1.6.2 Artificial

6.2.1.6.2.1 Permanent

6.2.1.6.2.2 Electromagnets

6.2.1.7 Classification of magnets according to

6.2.1.7.1 Power

6.2.1.7.2 Shapes

6.2.1.7.3 Clinical use

6.2.1.8 Physical properties of magnets

6.2.1.8.1 Magnetic permeability

6.2.1.8.2 Ferromagnetic materials

6.2.1.8.3 Antiferromagnetic materials

6.2.1.8.4 Paramagnetic materials

6.2.1.8.5 Diamagnetic materials

6.2.1.9 Measurement of magnetic field

6.2.1.10 Mechanism of action of magnets in the body

6.2.1.11 Properties effects and corresponding features of north & south poles

6.2.1.12 Maintenance of permanent magnets

6.2.1.13 Magnetic field deficiency syndrome

6.2.1.14 Magnetic overload

6.2.1.15 Earth as a huge magnet

6.2.1.16 Effect of biomagnetism in various organ systems

6.2.1.17 Modes of application of magnets

6.2.1.17.1 General

6.2.1.17.2 Local

6.2.1.17.3 Different kinds of magnetic devices used in application of therapy

6.2.1.18 Magnetic charging, mechanism, dosage and its effect and limitations

6.2.1.18.1 Water, oil, milk, honey

6.2.1.19 Magnetic therapy through shad chakras

6.2.1.20 Contraindications, complications, and limitations of magneto therapy.

6.2.1.21 Harmful effects of EMF and measures for minimizing it.

6.2.1.22 Research in Color therapy and magnet therapy

6.2.1.23 Recent Advances in Color and Magnet therapy

6.2.1.24 Reference Books:

6.2.1.24.1 The book of magnetic Healing by Roger Coghill

6.2.1.24.2 Magnet therapy – by Ghanashyamsingh Birla and Colette Hemlin

6.2.2 Color Therapy

6.2.2.1 Definition

6.2.2.2 Historical highlights

6.2.2.2.1 Ghadiyali's principle

6.2.2.2.2 Babbitt postulates

6.2.2.2.3 Modern history of color therapy

6.2.2.3 Classification of colors

6.2.2.4 How do rainbows form

6.2.2.5 Physics of light

6.2.2.6 Electromagnetic spectrum

6.2.2.7 Pathway of vision and color sensing

6.2.2.8 The human aura and colors

6.2.2.9 Relation of colors with shad chakras

6.2.2.10 Impact of color sense on emotions and psychology

6.2.2.11 Therapeutic effect of colors

6.2.2.12 Heliotherapy –

6.2.2.12.1 Health benefits

6.2.2.12.2 Physiological and chemical properties of sunlight

6.2.2.12.3 modes of application, plantain leaf sun bath, Chromothermolium

6.2.2.12.4 Procedure, precaution, indication and limitations.

6.2.2.12.5 Dr. Rikli's method of Sun bath, Dr. Kuhne's method of sun bath

6.2.2.13 Advanced color therapy

6.2.2.13.1 Photochemotherapy

6.2.2.13.2 Photobiological colored lighting to produce immunoregulation

6.2.2.14 Color breathing

6.2.2.15 Chromo charging of water, oil honey and food stuffs. And their effect on health and disease.

6.2.2.16 Limitation and contraindications of chromo therapy

6.2.2.17 Research updating related to chromo therapy

6.2.2.18 **Reference Books:**

6.2.2.18.1 Color therapy - Jonathan Dee and Lesley Taylor

6.2.2.18.2 Healing with color –Theo Gimbel

6.2.2.18.3 The power of color – Dr. Marton Walker

6.3 **Practical**

6.3.1 Procedural standards / guidelines for application of magnets

6.3.2 General application – lead system of application

6.3.3 Local application

6.3.3.1 high power magnets

6.3.3.2 Medium power magnets

6.3.3.3 Low power magnets

6.3.3.4 Specialized magnetic devices

6.3.4 Case documentation and application of magneto biology and color therapy - at least 20 cases

7. FORENSIC MEDICINE AND TOXICOLOGY (Duration: 12 Months)

Total hours: 150(Theory: 100+ practical 50)

8.1 Goals and Objectives

8.1.1 Goal:

The goal of teaching Forensic Medicine and Toxicology to undergraduate students is to provide a comprehensive knowledge of medico-legal responsibilities in the practice of medicine. He/she learns about law with respect to medical practice, medical negligence and respect for codes of medical ethics.

8.1.2 Objectives:

8.1.2.1 **Knowledge:**

After the completion of the course, the student shall be able to:

8.1.2.1.1 Outline basic medico-legal aspects of hospitals and general practice.

8.1.2.1.2 Define medico-legal responsibilities of a general physician working in a rural primary health center or an urban health center.

8.1.2.2 **Skills:**

After the completion of the course, the student shall be able to:

8.1.2.2.1 Observe and infer well, to enquire in criminal and medico-legal matters.

8.1.2.2.2 Diagnose and manage acute poisoning and chronic toxicity.

8.1.2.2.3 Be proficient in postmortem examinations including interpretation of findings

8.1.2.2.4 Observe medical ethics in his professional practice

8.1.2.3 **Integration**

At the completion of training, the student must be trained in medico legal responsibilities of physicians at all levels of health care as well as scientifically based clinical toxicology, being skilled in allied disciplines like Pathology, Radiology, Forensic Sciences, Hospital Administration, Medicine, Pharmacology, etc.

8.2 Theory

8.2.1 Forensic Medicine

8.2.1.1 Definition and scope of forensic medicine

8.2.1.2 Procedure of giving medical evidence with reference to Indian evidence act

8.2.1.3 Methods of identification of living and dead body, race, age, sex etc

8.2.1.4 Death – medico-legal aspects, certification of death, sudden death, causes, medico-legal importance of signs of death, changes due to death and calculating time of death

8.2.1.5 Medico-legal autopsy

8.2.1.6 Medico-legal wounds, their classification and study and Medico-legal aspects

8.2.1.7 Examination of blood stains, hair and seminal stains

8.2.1.8 Miscellaneous causes of death from heat, cold, electricity, starvation etc.

8.2.1.9 Violent asphyxia deaths – hanging, strangulation, suffocation, and drowning

8.2.1.10 Sexual offences – impotency and sterility, virginity, legitimacy, unnatural offences, medico-legal aspects

8.2.1.11 Infanticide

8.2.1.12 Medico-legal aspects of insanity

8.2.1.13 Forensic psychiatry

8.2.1.14 Definition, police inquest, difficulties in detection of crime, legal procedure in criminal courts and their powers oath, medical evidence, medical certificate, dying declaration

8.2.1.15 Rules of giving evidence, professional secrecy

8.2.1.16 Postmortem examinations

8.2.1.17 Death – signs of death, cadaveric rigidity and spasm, putrefaction, estimation of time since death

8.2.1.18 Death from asphyxia, differences between hanging and strangulation, suffocation and drowning

8.2.1.19 Death from burns, scalds and lighting

8.2.1.20 Rape and unnatural offences

8.2.1.21 Abortion, pregnancy and delivery, miscarriage

8.2.1.22 Laws in relation to a medical man, medical ethics, duties, professional privilege and responsibilities

8.2.2 Toxicology

8.2.2.1 General considerations of poisoning and classification

8.2.2.1.1 Actions of poison, factors, modifying their action

8.2.2.1.2 Diagnosis of poisoning

8.2.2.1.3 Treatment of poisoning in general

8.2.2.2 Poisons

8.2.2.2.1 Corrosives

8.2.2.2.2 Non-metallic poisons

8.2.2.2.3 Insecticides and weed killers

8.2.2.2.4 Metallic poisons

8.2.2.2.5 Organic irritant poisons

8.2.2.2.6 Somniferous poisons

8.2.2.2.7 Inebriant poisons

8.2.2.2.8 Deliriant poisons

8.2.2.2.9 Drug dependence

8.2.2.2.10 Food poisoning

8.2.2.2.11 Spinal poisons

8.2.2.2.12 Cardiac poisons

8.2.2.2.13 Asphyxiants

8.2.2.2.14 Miscellaneous

8.2.2.3 Legal responsibilities – Medical Ethics

8.2.2.4 Responsibilities and duties of medical practitioners to the State, professional secrecy and privileged communication

8.2.2.5 Unprofessional conduct, malpractice

8.2.2.6 The rights and privileges and duties of medical practitioners

8.2.2.7 The functions of state medical council and its relationship to IMC

8.2.2.8 Medical ethics approved by IMC

8.3 **Practical**

8.3.1 Age estimation

8.3.2 Autopsies – 10

8.3.3 Skeleton remains

8.3.4 Spotters

8.3.5 Examination of injured

8.3.6 Alcoholic

8.3.7 Psychiatric

8.3.8 Toxicology

8.4 Textbooks

8.4.1 Medical Jurisprudence – Modi

8.4.2 A textbook of Forensic Medicine – Narayana Reddy

8.4.3 A textbook of Forensic Medicine – MRK Krishna

8.5 Reference Books

8.5.1 The essentials of Forensic Medicine – Dr. CJ Polson, DJ Gee and B. Knight

8.5.2 Forensic Medicine – Corden and Shapiro

8.5.3 Principles and practice of Medical Jurisprudence – Taylor's

9. MANIPULATIVE THERAPIES

9.2 Goals and Objectives

9.2.1 Goal:

The goal of teaching Manipulative Therapies to undergraduate students is to provide them with comprehensive understanding of science and modes of applications of different manipulative modalities like Massage, Chiropractic, Osteopathy, Aromatherapy in preventive, curative and rehabilitative therapy.

9.2.2 Objectives:

9.2.2.1 Knowledge:

After the completion of the course, the student shall be able to:

9.2.2.1.1 Understand the principles and historical highlights of massage and manipulative techniques.

9.2.2.1.2 Demonstrate basic understanding of principles and procedures of different types of massage, their physiological effects, indications, and contraindications.

9.2.2.1.3 Delineate the principles and procedures of various manipulative therapies like chiropractic, osteopathy, reflexology and aromatherapy.

9.2.2.1.4 Describe essential oils with respect to the extraction, uses and combinations that are therapeutically used.

9.2.2.2 Skills:

After the completion of the course, the student shall be able to:

9.2.2.2.1 Perform different types of massage and manipulative therapies, such as Osteopathy. Chiropractic, Aromatherapy, Swedish massage, Kellogg's massage, Shiatsu, Geriatric Massage, Pediatric massage, Antenatal massage, Ayurvedic massage, etc;

9.2.2.2.2 Use therapies such as Reflexology and Zone therapy in their professional practice for musculoskeletal disorders, etc.

9.2.2.3 Integration

At the completion of training, the student should be able to comprehend the basic principles of Manipulative Therapies and apply it in clinical practice.

9.3 **Theory (Duration: 12 Months)**

Total hours: 200 (Theory: 100 Practical: 100)

9.3.1 Introduction and historical highlights of Massage and Manipulative Techniques

9.3.2 Classification of (lubricants) massage

9.3.2.1 Basic Therapeutic massage (Swedish) techniques – procedure, indications, contraindications, physiological action

9.3.2.2 Joint movements in massage therapy

9.3.2.3 Massage to local areas

9.3.3 Professional standards of massage professionals

9.3.4 Physiological effects, indications, contraindications of massage in various organ systems

9.3.5 Kellogg's massage

9.3.6 Shiatsu

9.3.7 Pediatric massage

9.3.8 Geriatric massage

9.3.9 Massage for antenatal care

9.3.10 Ayurvedic massage – terminology, procedure and manipulations

9.3.11 Panchakarma in brief

9.3.12 Chiropractic

9.3.12.1 History

9.3.12.2 Importance of spine in chiropractic

9.3.12.3 Physiological effect

9.3.12.4 Chiropractic examination

9.3.12.5 Spinal manipulative therapy

9.3.12.6 Treatment for various diseases

9.3.13 Osteopathy

9.3.13.1 Definition

9.3.13.2 History

9.3.13.3 Basic principles

9.3.13.4 Relation of osteopathy to musculoskeletal system

9.3.14 Basic principles and procedure of different types of massage – Thai, Balinese, Hot-stone massage, dry brush massage, deep tissue massage, powder massage, vibrator massage etc.

9.3.15 Aromatherapy

9.3.15.1 Definition, Origin and History

9.3.15.2 Essential Oils

9.3.15.2.1 Types

9.3.15.2.2 Extraction – Distillation, cold pressing or expression, solvent extraction

9.3.15.2.3 Storage of essential oils

9.3.15.2.4 How to recognize an essential oil

9.3.15.2.5 How to select aroma oils

9.3.15.2.6 How essential oils work

9.3.15.2.7 Carrier oils – Almond oil, Apricot kernel oil, Avocado oil, Carrot oil, Corn oil, Primrose oil, Grape seed Oil, Hazelnut oil, Jojoba oil, Olive oil, Peanut oil, Safflower oil, Sesame oil, Soya bean oil, Sunflower oil

9.3.15.3 Different methods of using essential oils – Inhalation, Diffusers, Vaporizers, Massage, Baths, Foot bath, Potpourri, Compresses, Oral intake, Beauty treatment, Room sprays, Insect repellants etc.

9.3.15.4 Description of different essential oils and their benefits

9.3.15.4.1 Amrette seed, Aniseed, Angelica, Basil, Bergamot, Black Pepper, Camphor, Cardamom, Chamomile, Clove bud, Cedar wood, Cypress, Clay sage, Eucalyptus, Fennel, Frankincense, Geranium, Ginger, Juniper berry, Lavender, Lemon, Lemongrass, Marjoram, Neroli, Orange, Palma Rosa, Peppermint, Patchouli, Pine, Rose, Rosemary, Sandalwood, Tarragon, Tea tree, Thyme (white), Vetiver, Ylang Ylang

9.3.15.5 The best essential oils

9.3.15.5.1 5 fragrance categories – green, floral, citrus, woody and spicy

9.3.15.5.2 Mixing of aroma oils, equipment required for mixing oils

9.3.15.6 Precautions for use of aroma oils – Skin patch test, testing essential oils in its pure state

9.3.15.7 Ill effects of aroma oils – in eyes, toxic effects, allergic effects etc.

9.3.15.8 Careful handling of essential oils

9.3.15.9 Contraindications

9.3.15.9.1 Oils to be avoided – Phototoxic or photosensitive oils, oils to be avoided in pregnancy, oils that cause skin irritation etc.

9.3.16 Reflexology and Zone therapy

9.3.16.1 What is Reflexology, history, and development

9.3.16.2 How does it work

9.3.16.3 Body and its reflex zones

9.3.16.4 Applications, indications and contra-indications

9.3.16.5 Preventive effects of reflexology

9.3.17 Research in Manipulative therapy

9.3.18 Recent advances in Manipulative therapy

9.4 **Practical**

9.4.1 10 full body massages

9.4.2 35 partial massages

9.4.3 10 Panchakarma demonstration Identification of different oils

9.4.4 Demonstration of different methods of application

9.4.4.1 Inhalation

9.4.4.2 Compress

9.4.4.3 Diffuses

9.4.5 Local baths

9.5 **Textbooks**

9.5.1 Massage – George Downing

9.5.2 Massage Therapy – Dr. JH Kellogg

9.5.3 Massage – Constant Young

9.5.4 The Complete Book of Massage – Claire Maxwell Hudson

9.5.5 Step-by-Step Massage – Carole McGilvery

9.5.6 All You Wanted to Know About Aromatherapy – Lalita Sharma

9.5.7 Aromatherapy – Julie Sadler

9.5.8 Ayurveda& Aromatherapy – Dr. Light Miller & Dr. Bryan Miller.

9.6 **Reference Books**

9.6.1 Massage Therapy – Susan G. Salvo

9.6.2 Magic of Massage – Tanushree Podder

9.6.3 Art of massage – Dr John Harvey Kellogg

10. ACUPUNCTURE (Duration:12 Months)

Total hours: 200(Theory:100 Practical:100)

10.1 Goals and Objectives

10.1.1 Goal:

The goal of teaching acupuncture to undergraduate students is to provide them with a comprehensive understanding of the science and art of Acupuncture, Acupressure and related therapies.

10.1.2 Objectives:

10.1.2.1 **Knowledge:**

After the completion of the course, the student shall be able to:

10.1.2.1.1 Illustrate the definitions of Acupuncture.

10.1.2.1.2 Understand the principles and historical highlights of Acupuncture.

10.1.2.1.3 Explain the concepts and theories behind the mechanism in which Acupuncture works, both traditional and modern

10.1.2.1.4 Demonstrate basic understanding of procedures of different styles of Acupuncture and related therapeutic modalities, such as Traditional Acupuncture, Scalp Acupuncture, Auriculotherapy, Acupuncture Anesthesia, Reflexology, Zone Therapy, Acupressure, etc.

10.1.2.1.5 Describe basic and advanced tools used in Acupuncture.

10.1.2.1.6 Be aware of the contraindications and dangers of Acupuncture, so as to avoid these in his/her professional practice.

10.1.2.2 **Skills:**

After the completion of the course, the student shall be able to:

10.1.2.2.1 Diagnose common diseases and disorders using diagnostic techniques employed in Acupuncture, such as Tongue Diagnosis, Pulse Diagnosis, etc;

10.1.2.2.2 Demonstrate skill in topographically locating meridians and Acupuncture points on the human body.

10.1.2.2.3 Perform Needling and other essential skills in delivering Acupuncture therapy to a patient.

10.1.2.2.4 Plan, implement and evaluate Acupuncture sessions with expertise in his/her professional practice.

10.1.2.3 **Integration**

At the completion of training, the student should be able to comprehensively understand traditional and modern approaches to Acupuncture and effectively utilize the same in preventive, promotive, curative and rehabilitative clinical practice as well as research projects.

10.2**Theory**

10.2.1 Definition, concepts of Acupuncture

10.2.2 Traditional and modern theories of Acupuncture

10.2.3 Materials and methods of Acupuncture

10.2.4 Principles of Acupuncture

10.2.5 Rules for the selection of Acupuncture points

10.2.6 Contraindications and complications of Acupuncture

10.2.7 The concept of Meridians:

10.2.7.1 Lung Meridian (Lu)

10.2.7.2 Large intestine Meridian (LI)

10.2.7.3 Spleen Meridian (Sp)

10.2.7.4 Stomach Meridian (St)

10.2.7.5 Heart Meridian (H)

10.2.7.6 Small intestine meridian (SI)

10.2.7.7 Urinary bladder meridian (UB)

10.2.7.8 Kidney Meridian (K)

10.2.7.9 Triple warmer meridian (TW)

10.2.7.10 Gall bladder meridian (GB)

10.2.7.11 Liver Meridian (Liv)

10.2.7.12 Governing vessel Meridian (GV)

10.2.7.13 Conceptional vessels Meridian (CV)

10.2.7.14 Extra Meridians

10.2.8 The extra-ordinary points

10.2.9 Examination-methods of Traditional Chinese Medicine

10.2.10 Auriculotherapy

10.2.11 Scalp acupuncture

10.2.12 Moxibustion

10.2.13 Types of Stimulation in Acupuncture

10.2.13.1 Manual stimulation

10.2.13.2 Electro acupuncture

10.2.14 Acupuncture Therapeutics

10.2.15 Acupuncture Anesthesia

10.2.16 Reflexology & Zone Therapy

10.2.16.1 What is reflexology, history and development

10.2.16.2 How does reflexology work

10.2.16.3 Body & its reflex zones

10.2.16.4 Applications, indications, and contra-indications Preventive effects of reflexology

10.2.17 Acupressure

10.2.17.1 What is Acupressure

10.2.17.2 Origin & development

10.2.17.3 Physiological effects

10.2.17.4 Therapeutic uses of Acupressure

10.2.17.5 Research in Acupuncture

10.2.17.6 Recent Advances and Developments in Acupuncture

10.3**Practical**

10.3.1 Demonstration of needling techniques and electro-stimulation, Moxibustion.

10.3.2 Each student should give treatment for at least 20 patients during the practical.

10.4**Reference Books: -**

10.4.1 Clinical Practice of Acupuncture - A.L. Aggarwal

10.4.2 Clinical Acupuncture - Dr. Anton Jayasurya

10.4.3 Principles and Practice of Acupuncture - Dr. J.K. Patel

10.4.4 Health in Your Hands - DevendraVora

10.4.5 Clinical Acupuncture and Moxibustion - Liu Gong Wang

10.4.6 Fundamentals of Acupuncture and Moxibustion - Liu Gong Wang/Akira Hyodo.

10.4.7 Advanced Acupuncture Therapy - Arjun L Agarwal, Govind N Sharma

10.4.8 Classical Acupuncture - The Standard Textbook - Porket. Hempen, the China Academy

10.4.9 Reiki: Empowerment through Reiki - Paula Horan

10.4.9.1 Reiki - Energy Medicine - Libby Barnett & Maggie Chambers with Susan Davidson

10.4.10 Pranic Healing

10.4.10.1 Pranic healing using Breathing with Healing Mantras - Dr. L.R. Chowdhry

10.4.10.2 Advanced Pranic Healing- Choa Kok Sui

10.4.10.3 The Ancient Science and Art of Pranic Crystal Cleaning- Choa Kok Sui.

11. YOGA AND ITS APPLICATIONS (Duration: 12 Months)

Total hours: 250 (Theory: 150 Practical: 100)

11.1 Goals and Objectives

11.1.1 Goal:

The goal of teaching Yoga and its applications to undergraduate students is to provide them with comprehensive understanding of Yoga with reference to traditional texts like PatanjaliYogasutras, Hatha YogaPradipika, Shiva samhita, Gheranda samhita and Swara Yoga; various streams of Yoga, advanced meditative techniques like Yoganidra, Omkar, Cyclic, Vipassana and learn about benefits of Yoga as compared to exercise.

11.1.2 Objectives:

11.1.2.1 **Knowledge:**

After the completion of the course, the student shall be able to:

11.1.2.1.1 Illustrate the knowledge of traditional texts like Patanjali Yoga Sutras, Hatha Yoga, Shiva Samhita and Gheranda Samhita.

11.1.2.1.2 Understand the principles behind various meditative practices like Yoganidra, Om meditation, cyclic meditation, Vipassana and so on.

11.1.2.1.3 Explain about Yoga in relation to its application in education, sports.

11.1.2.1.4 Demonstrate basic understanding of procedures of stretching and exercises.

11.1.2.1.5 Describe basic physiological changes of asanas

11.1.2.1.6 Be aware of the effects of shat kriyas and their adverse effects.

11.1.2.2 **Skills:**

After the completion of the course, the student shall be able to:

11.1.2.2.1 Describe the concept of Yoga as explained in the traditional texts.

11.1.2.2.2 Deliver a meditative session using any of the meditative styles.

11.1.2.2.3 Implement various exercises loosening or eye exercises or stretching to complement Yoga practice.

11.1.2.3 **Integration**

At the completion of training, the student should be able to comprehensively understand traditional approaches to Yoga and employ the same for therapeutic purposes.

11.2**Theory**

11.2.1 PatanjaliYogaSutras – First two chapters (i.e., Samadhi Pada and SadhanaPada, brief summary of VibhutiPada and Kaivalyapada)

11.2.2 Hatha YogaPradipika – full text with necessary reference to GherandaSamhita and Siva Samhita

11.2.2.1 Description of practice of asanas: Verses – 15, 16, 17, 32, 34, 35, 38, 44, 47, 48, 50, 51, 53, 54, 57, 58, 59, 62, 63, 64, 65, 67

11.2.2.2 Description of practice of pranayama: Verses – 2, 3, 5-12, 14, 16-20, 22, 24, 26-32, 34-37, 39, 40, 44-51, 54, 57, 59

11.2.3 Introduction to other streams of Yoga - Kundalini, Tantra, Swaraand Kriya

11.2.4 Yoganidra- methods, applications, effects and benefits

11.2.5 Meditation – types –omkar,cyclic, vipassanaetc. methods of application, benefits, precaution, its influence on health and disease

11.2.6 Yoga – in relation to personality and education

11.2.7 Yoga – in relation to sports and games, social and political life

11.2.8 Eye exercises – benefits, methods, precautions

11.2.9 Physiological aspects of asana

11.2.10 Physiological, neurophysiological aspects of pranayama

11.2.11 Shatkriyas – comparative study of shat kriyaswith other systems of medicine

11.2.12 Physiological aspects of exercises

11.2.13 Physical exercises for health and fitness

11.2.13.1 Introduction

11.2.13.2 Who should stretch?

11.2.13.3 When to stretch

11.2.13.4 Why to stretch

11.2.13.5 How to stretch

11.2.13.6 Relaxing stretches for back, legs, feet and ankles; hips, hamstrings, low back

11.2.13.7 Stretching exercises for elderly

11.2.13.8 Stretching exercises for abdominal muscles, arms, chest, ankles, legs, knee, thigh, forearm etc

11.2.13.9 Techniques of walking, running, cycling etc

11.2.13.10 Caring for the back

11.2.13.11 Research in Yoga Therapy

11.2.13.12 Recent Advances in Yoga therapy

11.3 **Practical**

11.3.1 All previous years' asana plus – veerasana, koormasana, kukkutasana, utthankoormasana, matsyendrasana, padmamayurasana, simhasana, sarvangasana (all variants), sirsasana(all variants)

11.3.2 All loosening (Sithilikarana Vyayama) and breathing exercises

11.3.3 All previous years' Pranayama plus – suryabhedana, Chandra bhedana, cat and tiger breathing, new variants of pranayama

11.3.4 All previous years' Kriyasplus – Dandadhouti, agnisara, nauli, bandhas, mudras

11.4**Textbooks**

11.4.1 Autobiography of a Yogi – ParamahamsaYogananda

11.4.2 Yoga as Philosophy and Religion – SN Dasgupta

11.4.3 Yoga – the Science of Holistic Siving – VK Yoga

11.4.4 A Complete Illustrated Book of Yoga – Swami Vishnu

11.4.5 Encyclopedia of Indian Physical Culture – DC Mujumdar

11.4.6 Preksha Meditation – Acharya Tulsi

• **Basic research & Research Methodology- Every 2nd & 4th Saturday**

12. NUTRITION AND MEDICINAL HERBS

12.1 Goals and Objectives

12.1.1 Goal:

The goal of teaching Nutrition and Medicinal Herbs to undergraduate students is to enable them to analyze nutritional profiles of their patients and prescribe diets to them based on nutritional requirements, as well as use herbs in the management of various diseases.

12.1.2 Objectives:

12.1.2.1 Knowledge:

After the completion of the course, the student shall be able to:

12.1.2.1.1 Describe fundamentals of nutrition, with respect to different nutrients and food groups.

12.1.2.1.2 Illustrate details of nutritional requirements for different age groups, as well as pregnant and lactating women.

12.1.2.1.3 Demonstrate therapeutic application of nutrition for common diseases.

12.1.2.1.4 Compare modern nutrition to traditional Naturopathic diets.

12.1.2.1.5 Have detailed knowledge of recent advances and studies, such as carcinogens in food, food additives, contaminants, etc.

12.1.2.1.6 Illustrate the use of specific herbs in common diseases, with therapeutic values.

12.1.2.2 Skills:

After the completion of the course, the student shall be able to:

12.1.2.2.1 Assess the nutritional status of a patient.

12.1.2.2.2 Plan, implement and evaluate nutritional advice for people of different ages and patients of different diseases, including the use of herbs.

12.1.2.3 Integration

At the completion of training, the student should be able to comprehensively integrate traditional Naturopathic nutrition and modern nutrition along with herbs and employ the same for therapeutic purposes.

12.2 Theory (Duration: 12 Months)

Total hours: 250 (Theory: 150 Practical: 100)

12.2.1 Nutrition

12.2.1.1 Definition of food, nutrition, nutrient and diet

12.2.1.2 What is nutrition healing

12.2.1.3 Defining essential nutrients

12.2.1.4 Proteins and amino acids

12.2.1.5 Carbohydrates

12.2.1.6 Lipids, sterols and their metabolism

12.2.1.7 Energy needs: assessment and requirements in humans

12.2.1.8 Electrolytes, water and acid-base balance

12.2.1.9 Minerals – calcium, phosphorous, magnesium, iron zinc, copper, iodine, selenium, chromium, ultra-trace minerals

12.2.1.10 Vitamins – A, retinoid, D, E, K, Thiamine, Riboflavin, Niacin, Pantothenic acid, Folic acid, B12, Biotin, C.

12.2.1.11 Clinical manifestations of human vitamin and mineral disorders

12.2.1.12 Role/significance of nutrition

12.2.1.12.1 Regulation of gene expression

12.2.1.12.2 Membrane and transport

12.2.1.13 Control of food intake

12.2.1.14 Antioxidants

12.2.1.15 Food groups

12.2.1.16 Metabolic consequences of starvation

12.2.1.17 Fiber and other dietary factors affecting nutrient absorption and metabolism

12.2.1.18 Hormone, cytokine and nutrient reactions

12.2.1.19 Nutrition and immune system

12.2.1.20 Oxidative stress and oxidant defense

12.2.1.21 Diet in work and exercise performance

12.2.1.22 Body composition: influence of nutrition, physical activity, growth and aging

12.2.1.23 Maternal nutrition

12.2.1.24 Nutritional requirements during infancy

12.2.1.25 Diet, nutrition, and adolescence

12.2.1.26 Nutrition in the elderly

12.2.1.27 Clinical nutrition assessment of infants and children

12.2.1.28 Clinical and functional assessment of adults

12.2.1.29 Nutritional assessment of malnutrition by anthropometric methods

12.2.1.30 Laboratory tests for assessing nutritional status

12.2.1.31 Dietary assessment

12.2.1.32 Childhood obesity

12.2.1.33 Nutritional management of infants and children with specific diseases and/or conditions

12.2.1.34 Assessment of mal absorption

12.2.1.35 Nutrition in pancreatic disorders

12.2.1.36 Nutrition in liver disorders

12.2.1.37 Nutrition and diet in the management of hyperlipidemia and atherosclerosis

12.2.1.38 Nutrition, diet and hypertension

12.2.1.39 Diet, nutrition and prevention of cancer

12.2.1.40 Carcinogens in foods

12.2.1.41 Nutritional support of the cancer patient

12.2.1.42 Nutrition and diet in rheumatic diseases

12.2.1.43 Nutritional management of diabetes

12.2.1.44 Obesity

12.2.1.45 Nutritional aspects of hematologic disorders

12.2.1.46 Renal disorders and nutrition

12.2.1.47 Nutrition, respiratory function and disease

12.2.1.48 Diagnosis and management of food allergies

12.2.1.49 Nutrition and diet in alcoholism

12.2.1.50 The hypercatabolic state

12.2.1.51 Nutrition and infection

12.2.1.52 Nutritive value of food ingredients commonly used in India

12.2.1.53 Enteral feeding (only theory)

12.2.1.54 Parenteral nutrition (only theory)

12.2.1.55 Nutrition and medical ethics – the interplay of medical decisions, patients' rights, and the judicial system

12.2.1.56 RDA – individuals and populations

12.2.1.57 Nutritional implications of vegetarian diets

12.2.1.58 Social and cultural influences on food consumption and nutritional status

12.2.1.59 Food additives, contaminants and natural toxins

12.2.1.60 Comparative study of modern nutrition and traditional naturopathy diet

12.2.2 MEDICINAL HERBS

12.2.2.1 Introduction to Herbology

12.2.2.2 Following herbs are to be studied with respect to their source and therapeutic uses. Botanical details can be avoided

12.2.2.2.1 Embelicaofficinalis

12.2.2.2.2 Cassia fistula

12.2.2.2.3 Ficus glomerata

12.2.2.2.4 Vetiveriazizanodies

12.2.2.2.5 Cinnamomumcamphora

12.2.2.2.6 Mosardicacharantia

12.2.2.2.7 Tribulusterrestris

12.2.2.2.8 Myristicafragrans

12.2.2.2.9 Cuminumcyminum

12.2.2.2.10 Sesamumindicum

12.2.2.2.11 Ocimum sanctum

12.2.2.2.12 Punicagranatum

12.2.2.2.13 Coriandrumsativum

12.2.2.2.14 Azadirachtaindica

12.2.2.2.15 Allium cepa

12.2.2.2.16 Piper longum

12.2.2.2.17 Psoraleacorylifolia

12.2.2.2.18 Taxusbaccata

12.2.2.2.19 Aeglemarmelos

12.2.2.2.20 Semecarpusanacardium

12.2.2.2.21 Phyllanthusniruri

12.2.2.2.22 Piper nigrum

12.2.2.2.23 Trigonellafoenum – graecum

12.2.2.2.24 Santhalum album

12.2.2.2.25 Allium sativum

12.2.2.2.26 Mimosa pudica

12.2.2.2.27 Acoruscalamus

12.2.2.2.28 Asparagus racemosus

12.2.2.2.29 Rauwolfia serpentine

12.2.2.2.30 Curcuma longa

12.2.2.2.31 Terminaliachebula

12.2.2.2.32 Ferula narthex

12.2.2.2.33 Syzygiumaramaticum

12.2.2.2.34 Terminaliabelerica

12.2.2.2.35 Gingiberofficinalis

12.2.2.3 Research In Nutrition & Medicinal herbs

12.2.2.4 Recent Advances in Nutrition & Medicinal herbs

12.3**Textbooks**

12.3.1 Davidson and Passamore Human Nutrition – Passamore

12.3.2 Clinical Dietetics and Nutrition – FP Antia

12.3.3 Normal Therapeutic Nutrition – Corinne Robinson

12.3.4 Essentials of Food and Nutrition – Swaminathan

12.3.5 Sprouts – JD VaishYogaSamsthan

12.3.6 Science and Art of Food and Nutrition – Herbert Shelton

12.3.7 Nutritive Values of Indian Foods – NIN (Hyd)

12.3.8 Publications of NIN, Hyderabad

12.3.9 Herbs that heal – HK Bakhru

12.3.10 Charaka and Sushruta Samhita

13. Fundamentals of Ayurveda – Mahadev Shastri

14. DIAGNOSTIC METHODS– I

(Duration: 12 months)

Total hours: 200 (Theory: 100 Practical: 100)

13.1 Goals and Objectives

13.1.1 Goal:

The goal of teaching Diagnostic Methods in Naturopathy to undergraduate students is to provide them with comprehensive knowledge of diagnostic methods employed by traditional Naturopaths that can be used efficiently to diagnose various diseases without the use of sophisticated technology.

13.1.2 Objectives:

13.1.2.1 **Knowledge:**

After the completion of the course, the student shall be able to:

13.1.2.1.1 Define and be aware of historically significant developments in diagnostic procedures used in Naturopathy

13.1.2.1.2 Illustrate the characteristics of a Healthy Body with respect to Naturopathic Principles

13.1.2.1.3 Describe philosophical theories of causation of disease according to Naturopathy

13.1.2.1.4 Utilise knowledge of theory of encumbrances, their types and interpretation, along with naturopathic ways to therapeutically correct them;

13.1.2.1.5 Describe in detail Iris Diagnosis, with respect to history, techniques, iris signs, interpretations and tools used, and use the same to diagnose diseases.

13.1.2.1.6 Comprehend the techniques and interpretations of stool and urine diagnosis, correlating modern medical knowledge and Ayurvedic sthoola and muthra pariksha;

13.1.2.1.7 Describe the characteristics of normal and unhealthy skin, in different diseases.

13.1.2.2 **Skills:**

After the completion of the course, the student shall be able to:

13.1.2.2.1 Use knowledge of different diagnostic procedures in Naturopathy to effectively and accurately diagnose various diseases, such as Iris Diagnosis, Facial Diagnosis, Stool and Urine Diagnosis, etc.

13.1.2.3 **Integration**

At the completion of training, the student should be able to comprehensively understand the principles and procedures of Diagnostic Methods in Naturopathy and employ the same for diagnostic and prognostic purposes.

13.2 **Theory**

13.2.1 Facial Diagnosis

13.2.1.1 Introduction

13.2.1.1.1 Definition

13.2.1.1.2 Historical Highlights

13.2.1.2 Characteristics of Healthy Body

13.2.1.3 Foreign matter theory, toxemia theory, vitality theory

13.2.1.4 Physiological and pathological perspective of foreign matter, toxemia and vitality theory

13.2.1.5 Unity of disease and unity of cure – interpretation with contemporary medicine

13.2.1.6 Encumbrance, its types and its interpretation in health and disease

13.2.1.7 Habits – significance /consequences and its correspondence in encumbrance

13.2.1.8 Significance of naturopathy treatment modalities in correction of encumbrances.

13.2.2 Iridiagnosis

13.2.2.1 Definition and Historical Highlights

13.2.2.2 Anatomy of iris in detail

13.2.2.3 Conceptual theories of Iridiagnosis

13.2.2.4 Comparison of the science of iridiagnosis with concepts of Drishtipraraksha in Ayurveda and ophthalmology in modern medicine.

13.2.2.5 Technique in iris reading

13.2.2.5.1 Normal and abnormal iris

13.2.2.5.2 The vibratory theory and its significance

13.2.2.5.3 Diagnostic chart

13.2.2.6 Iridoscope

13.2.2.7 Zones

13.2.2.8 Sectorial division

13.2.2.9 Interpretation of iris manifestation

13.2.2.9.1 Inherent lesions and weakness

13.2.2.9.2 Cataract

13.2.2.9.3 Toxic settlements

13.2.2.9.4 Nerve rings

13.2.2.9.5 Lymphatic rosary

13.2.2.9.6 Injuries and surgeries

13.2.2.9.7 Psora spot, scurf rim

13.2.2.9.8 Radii Solaris

13.2.2.9.9 Sympathetic nerve wreath

13.2.2.9.10 Closed and open lesions

13.2.2.9.11 Sodium ring

13.2.2.9.12 Circulatory indicators

13.2.2.9.13 Drugs and chemicals' appearance in the iris and their effect on the body

13.2.2.9.13.1 Arsenic, bismuth, bromides, coal tar products, ergot, glycerin, iodine, iron, lead, mercury, opium, phosphorus, quinine, salicylic acid, sodium, strychnine, sculpture, turpentine, vaccines etc.

13.2.3 Stool & Urine Diagnosis

13.2.3.1 Characteristics of Normal stool & urine

13.2.3.2 Abnormal characteristics and its significance

13.2.3.3 Comparison of Stool and urine diagnosis with mala & moothra pareeksha in Ayurveda

13.2.4 Skin Diagnosis

13.2.4.1 Anatomy of skin

13.2.4.2 Skin types

13.2.4.3 Abnormality and its significance in Health

13.2.4.4 Comparison of skin diagnosis with twakpareeksha in Ayurveda

13.2.5 Tongue diagnosis

13.2.6 Pulse diagnosis

13.2.7 Chromo diagnosis

13.2.8 Research in Naturopathy diagnosis

13.2.9 Recent Advances and Development in Naturopathy Diagnosis

13.3**Practical**

13.3.1 Case sheet writing - minimum 25 cases with naturopathic diagnostic methods

13.3.2 Regular hospital visit

13.3.3 Dissertation of at least 20 cases studies with significant and relevant Naturopathic diagnostic modalities

13.4**Reference Books:**

13.4.1 Macfaddans Encyclopedia of Physical Culture - Bernard Macfadden

13.4.2 Asthangahridyam

13.4.3 Charaka samhitha

13.4.4 Susrutha samhitha

13.4.5 The Science of Facial Expression – Louis Kuhne

13.4.6 Iridology - Dr. Bernard Jenson

14. DIAGNOSTIC METHODS– II

(Duration: 12 Months)

Total hours: 250 (Theory: 150 Practical: 100)

14.1 Goals and Objectives

14.1.1 Goal:

The goal of teaching Diagnostic Methods in Conventional Medicine to undergraduate students is to provide them with comprehensive knowledge of diagnostic methods employed by conventional doctors that can be used efficiently to diagnose various diseases, for diagnosis as well as prognosis.

14.1.2 Objectives:

14.1.2.1 **Knowledge:**

After the completion of the course, the student shall be able to:

14.1.2.1.1 Understand the procedures and nuances in approaching a patient and taking a detailed history and writing a case report.

14.1.2.1.2 Illustrate examination procedures and techniques generally as well as for specific systems and make provisional diagnoses of common diseases.

14.1.2.1.3 Describe laboratory investigations used for supporting the provisional diagnosis made after history taking and examinations.

14.1.2.1.4 Prescribe and interpret radiological investigations, biochemical investigations, sonography, EEG, ECG, EMG, echocardiography, CT, PET, MRI, etc for diagnostic and prognostic purposes.

14.1.2.1.5 Explain and demonstrate knowledge of invasive tests such as paracentesis, thoracocentesis, lumbar puncture, laparoscopy, endoscopy, biopsy, etc.

14.1.2.2 **Skills:**

After the completion of the course, the student shall be able to:

14.1.2.2.1 Effectively take a case history with examinations and prepare a detailed case report.

14.1.2.2.2 Prescribe and interpret any further investigations required for the provisional diagnosis made.

14.1.2.3 **Integration**

At the completion of training, the student should be able to comprehensively understand the principles, procedures and nuances of Diagnostic Methods in Conventional Medicine and employ the same for diagnostic and prognostic purposes.

14.2 **Theory**

14.2.1 Examination of the Patient

14.2.1.1 Approach to a patient

14.2.1.2 History taking and case sheet writing

14.2.1.3 Symptomatology

14.2.1.4 Examination of vital data

14.2.1.5 Importance of height, weight, abdominal girth

14.2.1.6 General physical examination

14.2.1.7 Examination of skin, nail and hair

14.2.1.8 Systemic examination of the patient

14.2.1.8.1 Examination of Abdomen (digestive system)

14.2.1.8.2 Examination of Cardiovascular system

14.2.1.8.3 Examination of Respiratory system

14.2.1.8.4 Examination of Renal and urogenital system

14.2.1.8.5 Examination of Central nervous system

14.2.1.8.6 Examination of Locomotor system

14.2.1.8.7 Examination of ear, nose and throat

14.2.1.8.8 Gynecological examination

14.2.1.8.9 Endocrine system and metabolic disorder

14.2.1.8.10 Examination of eye

14.2.1.9 Provisional diagnosis

14.2.1.10 Routine and special investigations

14.2.1.10.1 Laboratory investigations: Urine analysis, stool examination, blood examination-peripheral smear, total WBC count, differential WBC count; ESR, Hb estimation; BT, CT, platelet count, red cell indices, bone marrow examination.

14.2.1.10.2 Radiological investigations: Plain X ray chest, K.U.B., lumbar and cervical spine, skull and para nasal sinuses, joints

14.2.1.10.3 Contrast Radiology: Barium swallow, barium meal, barium enema; cholecystography, pyelography, angiography, bronchogram, myelogram

14.2.1.10.4 Electrocardiography

14.2.1.10.5 Echocardiograph

14.2.1.10.6 Coronary angiography

14.2.1.10.7 Electro-encephalography

14.2.1.10.8 Biochemical investigations: LFT, creatinine clearance test, Vanillo-mandelic acid (VMA) excretion test in urine, SGOT and SGPT, LDH, CPK, blood urea, serum creatinine, cholesterol, renal function test, serum uric acid and serum amylase

14.2.1.10.9 Diagnostic Paracentesis

14.2.1.10.10 Diagnostic Thoracocentesis

14.2.1.10.11 Lumbar puncture and CSF analysis

14.2.1.10.12 Radioactive iodine uptake studies

14.2.1.10.13 Thyroid T3, T4, TSH estimation

14.2.1.10.14 Diagnostic skin tests

14.2.1.10.15 Endoscopic procedures

14.2.1.10.16 Ultra-sonography

14.2.1.10.17 CT, PET, MRI, Doppler

14.2.1.10.18 Tissue biopsy and FNAC

14.2.2 Final Diagnosis

14.3 **Practical**

14.3.1 History taking and physical examination of cases

14.3.2 Case sheet writing of different types of cases (25)

14.3.3 Demonstration of equipment and instruments used for investigation in modern diagnostics

14.3.4 Demonstration tour of an ultra-modern super-specialty hospital to view the latest technique of modern diagnosis

14.4 **Textbooks**

14.4.1 Hutchison's Clinical Methods

14.4.2 Manual of clinical Methods – PS Shankar

14.4.3 Clinical Diagnosis – JalVakil

14.4.4 Clinical Methods – Chamberlin

14.4.5 Physical Diagnosis – Golwala

14.4.6 Harrison's Principles of Internal Medicine

14.4.7 Manipal Manual of Clinical Medicine

14.4.8 Macleod's Clinical Examination

14.4.9 Davidson's Principles and Practice of Medicine

14.4.10 Essentials in Hematology and Clinical Pathology

15. PSYCHOLOGY AND BASIC PSYCHIATRY (Duration: 12 months)

Total hours: 150 (Theory: 100 Practical: 50)

15.1 Goals and Objectives

15.1.1 Goal:

The goal of teaching Psychology and Basic Psychiatry to undergraduate students is to provide them with comprehensive knowledge of normal and abnormal psychology and assessment of the same for therapeutic purposes.

15.1.2 Objectives:

15.1.2.1 **Knowledge:**

After the completion of the course, the student shall be able to:

15.1.2.1.1 Describe the evolution of Psychology from speculation to science.

15.1.2.1.2 Illustrate mechanisms of sense and perception, states of consciousness and their functions.

15.1.2.1.3 Understand basic and complex functions such as learning, memory, thinking, language, motivation, emotion, intelligence, development of psychology across lifespan, personality, stress coping, social psychology, attitudes, etc.

15.1.2.1.4 Explain abnormal psychology and describe etiology and psychopathology along with classification of disorders.

15.1.2.1.5 Demonstrate knowledge of therapies aimed at psychological health, such as psychotherapy, Yoga, etc;

15.1.2.2 **Skills:**

After the completion of the course, the student shall be able to:

15.1.2.2.1 Utilize knowledge of psychology and psychiatry in diagnosing and managing various psychological disorders, assessing psychological profile.

15.1.2.2.2 Demonstrate usage of various therapeutic tools in psychiatry to improve mental health in professional practice.

15.1.2.3 **Integration**

At the completion of training, the student should be able to integrate knowledge of normal and abnormal psychology and psychiatric therapies and efficiently utilise the same for therapeutic purposes.

15.2**Theory**

15.2.1 Psychology

15.2.1.1 Unit 1: The Evolution of Psychology- How psychology developed from speculation to science

15.2.1.1.1 Studying the mind and behavior

15.2.1.1.2 Early scientific approaches to psychology

15.2.1.1.2.1 Structuralism

15.2.1.1.2.2 Functionalism

15.2.1.1.3 Contemporary approaches to psychology

15.2.1.1.3.1 Behavioral approach

15.2.1.1.3.2 Psychodynamic approach

15.2.1.1.3.3 Cognitive approach

15.2.1.1.3.4 Behavioral neuroscience approach

15.2.1.1.3.5 Evolutionary psychology approach

15.2.1.1.3.6 Sociocultural approach

15.2.1.1.4 Positive approach to psychology: Humanistic movement and the positive psychology movement

15.2.1.2 Unit 2: Sensation and Perception

15.2.1.2.1 How we sense and perceive the world

15.2.1.2.1.1 The visual system

15.2.1.2.1.2 The auditory system

15.2.1.2.1.3 Other senses

15.2.1.2.2 States of consciousness

15.2.1.2.2.1 Levels of awareness

15.2.1.2.2.2 Sleep and dreams

15.2.1.2.3 Altered states of consciousness

15.2.1.2.3.1 Hypnosis

15.2.1.2.3.2 Meditation

15.2.1.2.3.3 Drug induced states

15.2.1.3 Unit 3: Learning and Memory

15.2.1.3.1 Types of learning

15.2.1.3.1.1 Classical conditioning

15.2.1.3.1.2 Operant conditioning

15.2.1.3.1.3 Observational learning

15.2.1.3.1.4 Cognitive factors in learning

15.2.1.3.2 Memory

15.2.1.3.2.1 Nature of memory

15.2.1.3.2.2 Memory encoding: getting information into memory – the role of attention

15.2.1.3.2.3 Levels of processing

15.2.1.3.2.4 Enriching encoding

15.2.1.3.2.5 Memory storage

15.2.1.3.2.5.1 Sensory memory

15.2.1.3.2.5.2 Short-term memory

15.2.1.3.2.5.3 Long-term memory

15.2.1.3.2.6 Memory retrieval

15.2.1.3.2.6.1 Serial position effect

15.2.1.3.2.6.2 Retrieval cues and the retrieval task

15.2.1.3.2.6.3 Retrieval of autobiographical memories

15.2.1.3.2.6.4 Retrieval of emotional memories

15.2.1.3.2.6.5 Forgetting

15.2.1.3.2.7 Biochemistry of memory

15.2.1.3.2.8 Neural circuitry of memory

15.2.1.3.2.9 Anatomy of memory

15.2.1.3.2.10 Are there multiple memory systems? Implicit versus explicit memory

15.2.1.3.2.11 Declarative versus procedural memory

15.2.1.3.2.12 Semantic versus episodic memory

15.2.1.4 Unit 4: Thinking and Language

15.2.1.4.1 The cognitive revolution in psychology

15.2.1.4.2 Concept formation

15.2.1.4.3 Problem solving

15.2.1.4.4 Critical thinking

15.2.1.4.5 Reasoning and decision making

15.2.1.4.6 Language and thought language acquisition and development

15.2.1.5 Unit 5: Motivation and Emotion

15.2.1.5.1 Approaches to motivation

15.2.1.5.1.1 Evolutionary approach

15.2.1.5.1.2 Drive reduction theory

15.2.1.5.1.3 Optimum arousal theory

15.2.1.5.1.4 The cognitive approach

15.2.1.5.2 Hunger

15.2.1.5.2.1 The biology of hunger and thirst

15.2.1.5.2.2 Environmental factors in the regulation of hunger

15.2.1.5.2.3 Eating and weight

15.2.1.5.2.4 Sexuality - the biology of sex and the human sexual response: cognitive and sensory/perceptual factors

15.2.1.5.2.5 Cultural factors

15.2.1.5.2.6 Psychosexual dysfunctions

15.2.1.5.2.7 Sexual behavior and orientation

15.2.1.6 Unit 6: Intelligence

15.2.1.6.1 Nature of intelligence

15.2.1.6.2 Intelligence testing

15.2.1.6.3 Neuroscience and intelligence

15.2.1.6.4 Theories of multiple intelligences

15.2.1.6.5 The extremes of intelligence and creativity

15.2.1.6.6 The influence of heredity and environment

15.2.1.7 Unit 7: Human development across the life span

15.2.1.7.1 Exploring human development

15.2.1.7.2 Prenatal development

15.2.1.7.3 Child development: physical, cognitive and socio emotional development in childhood

15.2.1.7.4 Adolescence positive psychology and adolescents

15.2.1.7.4.1 Physical, cognitive and socio emotional development in adolescence

15.2.1.7.5 Adult development and aging

15.2.1.7.6 Physical, cognitive and socio emotional development in adulthood

15.2.1.8 Unit 8: Personality

15.2.1.8.1 The nature of personality

15.2.1.8.2 Psychodynamic perspectives

15.2.1.8.3 Behavioral perspectives

15.2.1.8.4 Humanistic perspectives

15.2.1.8.5 Biological perspectives and contemporary empirical approaches to personality

15.2.1.9 Unit 9: Stress coping and health

15.2.1.9.1 The nature of stress

15.2.1.9.2 Major types of stress

15.2.1.9.3 Responding to stress

15.2.1.9.4 The effects of stress on psychological functioning

15.2.1.9.5 The effects of stress on physical health

15.2.1.9.6 Factors moderating the impact of stress

15.2.1.9.7 Health-impairing lifestyles

15.2.1.9.8 Reactions to illness

15.2.1.9.9 Improving coping and stress management

15.2.1.10 Unit 10: Social Psychology

15.2.1.10.1 Social thinking

15.2.1.10.1.1 Attribution

15.2.1.10.1.2 Social perception

15.2.1.10.1.3 Attitudes

15.2.1.10.2 Social influences

15.2.1.10.2.1 Conformity and obedience

15.2.1.10.2.2 Group influence

15.2.1.10.2.3 Leadership

15.2.1.10.3 Inter group relations

15.2.1.10.3.1 Group identity

15.2.1.10.3.2 Prejudice

15.2.1.10.3.3 Ways to improve interethnic relations

15.2.1.10.4 Social interaction

15.2.1.10.4.1 Aggression

15.2.1.10.5 Relationships

15.2.1.10.5.1 Attraction

15.2.1.10.5.2 Love

15.2.1.10.5.3 Relationships and gender

15.2.2 Abnormal psychology: Psychiatry

15.2.2.1 Unit 1: Abnormal behavior in historical context- the science of psychopathology

15.2.2.1.1 The historical conceptions of abnormal behavior

15.2.2.1.1.1 The supernatural tradition

15.2.2.1.1.2 The biological tradition

15.2.2.1.1.3 The psychological tradition

15.2.2.1.2 An integrative approach to psychopathology

15.2.2.1.3 One-dimensional and multidimensional models

15.2.2.1.4 Genetic contributions to psychopathology neuroscience and its contributions to psychopathology

15.2.2.1.5 Behavioral and cognitive science

15.2.2.1.6 Cultural, social and interpersonal factors

15.2.2.1.7 Classification of psychological disorders: DSM IV and ICD 10 Classifications

15.2.2.2 Unit 2: anxiety disorders

15.2.2.2.1 Generalized anxiety disorders

15.2.2.2.2 Panic disorders; phobias

15.2.2.2.3 Obsessive-compulsive disorders

15.2.2.3 Unit 3: Somatoform and Dissociative disorders

15.2.2.3.1 Hypochondriasis

15.2.2.3.2 Somatization disorder

15.2.2.3.3 Conversion disorder

15.2.2.3.4 Pain disorder

15.2.2.3.5 Dissociative disorders

15.2.2.4 Unit 4: Mood disorders

15.2.2.4.1 Depressive disorders

15.2.2.4.2 Bipolar disorders

15.2.2.4.3 Suicide

15.2.2.5 Unit 5: Substance-related disorders

15.2.2.5.1 Depressants

15.2.2.5.1.1 Alcohol use disorders

15.2.2.5.1.2 Sedative substance uses disorders

15.2.2.5.1.3 Hypnotic substance uses disorders

15.2.2.5.1.4 Anxiolytic substance uses disorders

15.2.2.5.2 Stimulants

15.2.2.5.2.1 Amphetamine use disorders

15.2.2.5.2.2 Cocaine use disorders

15.2.2.5.2.3 Nicotine use disorders

15.2.2.5.2.4 Caffeine use disorders

15.2.2.5.3 Opioids use disorders

15.2.2.5.4 Hallucinogens

15.2.2.5.4.1 Marijuana

15.2.2.5.4.2 LSD

15.2.2.5.4.3 Other Hallucinogens

15.2.2.5.5 Other drugs of abuse

15.2.2.6 Unit 6: Schizophrenia and other psychotic disorders

15.2.2.6.1 Schizophrenia

15.2.2.6.1.1 Clinical description

15.2.2.6.1.2 Causes

15.2.2.6.1.3 Types and treatment

15.2.2.6.2 Personality disorders – cluster A, B and C

15.2.2.6.3 Psychotherapies

15.2.2.6.3.1 Psychodynamic therapies

15.2.2.6.3.2 Behavioral therapies

15.2.2.6.3.3 Humanistic therapies

15.2.2.7 Unit 7: Mental health and Yoga

15.3**References:**

1. Weiten, Wayne (1995) themes and variations 3rd edition, New York Brooks/Cole Publishing company
2. Santrock, J.W. (2005) Psychology, 7th edition, New York, McGraw Hill publications
3. Barlow, D.H. and Durand, V.M. (2002) Abnormal Psychology, 3rd edition, United States, Wadsworth Thomson Learning

- **Basic research & Research Methodology- Every 2nd & 4th Saturday**

16. **FASTING THERAPY AND DIETETICS (Duration: 18 months)**

Total hours: 300 (Theory: 200 Practical: 100)

16.1 Goals and Objectives

16.1.1 Goal:

The goal of teaching Fasting Therapy and Dietetics to undergraduate students is to provide them with comprehensive knowledge of diet management and Fasting therapy and utilization of the same for therapeutic purposes.

16.1.2 Objectives:

16.1.3 Knowledge:

After the completion of the course, the student shall be able to:

16.1.3.1.1 Describe definitions and historical highlights of fasting therapy through the centuries, including fasting employed in different religions.

16.1.3.1.2 Classify fasting according to duration, purpose, type, etc.

16.1.3.1.3 Define rules and regulations of fasting to be followed.

16.1.3.1.4 Understand the metabolism of fasting.

16.1.3.1.5 Understand contraindications and indications of fasting in order to efficiently use fasting as a therapy.

16.1.3.1.6 Understanding Calorie Restriction: Concept, Method, Prevailing basic-Clinical-applied evidence.

16.1.3.1.7 Understand the concept of dietetic principles in Naturopathy.

16.1.3.1.8 Understand food combinations and health, including dietary requirements for different age groups, including pregnant and lactating women.

16.1.3.1.9 Describe importance of various components of diet, such as dietary fiber, vitamins, minerals, etc.

16.1.3.1.10 Explain auxiliary concepts of dietetics such as food hygiene, etc.

16.1.3.2 **Skills:**

After the completion of the course, the student shall be able to:

16.1.3.2.1 Utilize knowledge of fasting therapy and dietetics in managing various diseases.

16.1.3.2.2 Demonstrate usage of therapeutic diets and fasting therapy in promotive, preventive, curative and rehabilitative therapy.

16.1.3.3 **Integration**

At the completion of training, the student should be able to integrate knowledge of fasting therapy and dietetics and efficiently utilise the same for therapeutic purposes.

16.2 **Fasting**

16.2.1 Definition

16.2.2 Historical highlights

16.2.2.1 Indian: According to Vedas, Ayurveda, Epics and other pioneer Naturopaths

16.2.2.2 Western

16.2.3 Evidence of fasting in animals and its benefits

16.2.4 Fasting in different religions

16.2.5 Classification of fasting and its effects, limitations, according to

16.2.5.1 Duration (Short, long, intermittent, weekly)

16.2.5.2 Purpose (Preventive, therapeutic, religious, political)

16.2.5.3 Type (Dry, water, juice, mono-diet)

16.2.6 Starvation – pathological features in different organ systems

16.2.7 Physiological changes of fasting in short, long, intermittent, dry, water, juice (lemon honey, tender coconut, sugarcane juice, alkaline juices, honey water etc.) and mono diet fasting.

16.2.8 Mechanism of Fasting Therapy. How does fasting work?

16.2.9 Difference between hunger and starvation

16.2.10 Rules and regulations for administering fasting

16.2.11 Rules and regulations for selection of patient for fasting

16.2.12 Hygiene and auxiliaries of fasting

16.2.13 Sane fasting

16.2.14 Do's and don'ts of fasting

16.2.15 Metabolism of fasting

16.2.16 Preparation of individuals for fasting

16.2.16.1 Psychological effects and barriers for fasting

16.2.16.2 Crises during fasting therapy and its management

16.2.16.3 Significance of enema during fasting and its physiology

16.2.16.4 Significance of fasting in fever

16.2.16.5 Fasting for preservation of health

16.2.16.6 Contraindications and limitations of fasting

16.2.17 Research in Fasting therapy

16.2.18 Recent advances in fasting therapy

16.3**Dietetics**

16.3.1 Concept of health in naturopathy

16.3.2 Dietetic principles in naturopathy

16.3.3 Concept of wholesome diet

16.3.4 Medical values of food

16.3.5 Natural qualities / properties / characters of foods in naturopathy / Ayurveda / modern nutrition

16.3.6 Natural food and health

16.3.6.1 Importance of green vegetables, other vegetables, fruits and ingredients

16.3.6.2 Chemical composition of different raw juices and their effects and uses

16.3.6.3 Wheat grass, beetroot, cabbage, cucumber, garlic, papaya, mango, pineapple, pumpkins etc.

16.3.6.4 Comparison with raw and cooked food

16.3.6.5 Sprouts, nutrition and method

16.3.7 Food combination and health

16.3.8 Naturopathic hospital dietetics and classification

16.3.9 Disease management for different diseases

16.3.10 Food allergies and diet

16.3.11 Seasonal changes

16.3.12 Dietary requirements for pregnancy, lactation and infancy

16.3.13 Food hygiene and health

16.3.14 Methods of cooking – nutrient losses and preservation

16.3.15 Dietary fiber and its therapeutic effects

16.3.16 Customs and traditions of eating

16.3.17 Emotional states and diet

16.3.18 Research in Dietetics

16.3.19 Recent Advances in Dietetics

16.4**Practical**

16.4.1 Visits to different diet departments of naturopathy and modern medicine hospitals

16.4.2 Menu planning using natural foods and raw diet in general

16.4.3 Demonstration of different sprouts

16.4.4 Preparation of low-cost balanced diet for different population groups using natural foods

16.4.5 Canteen duties at different naturopathy hospitals

16.4.6 Visit to different nutrition centers like CFTRI, Mysore, NIN, Hyderabad etc.

16.4.7 Study of 20 fasting cases

16.4.8 Case studies of 10 with records

16.5 **Textbooks**

16.5.1 Fasting for Healthy and Long Life – Carrington

16.5.2 Fasting Cure – Lakshman Sharma

16.5.3 Fasting - The Ultimate Diet - Allan Cott

16.5.4 Mucusless Diet Healing System - Arnold Ehret

16.5.5 The Fasting Cure (Classic Reprint) - Upton Sinclair

16.5.6 Fasting Can Save Your Life - Herbert M. Shelton

16.5.7 Davidson and Passamore Human Nutrition – Passamore

16.5.8 Clinical Dietetics and Nutrition – FP Antia

16.5.9 Normal Therapeutic Nutrition – Corinne Robinson

16.5.10 Essentials of Food and Nutrition – Swaminathan

16.5.11 Sprouts – JD Vaish Yoga Samsthan

16.5.12 Science and Art of Food and Nutrition – Herbert Shelton

16.5.13 Nutritive Values of Indian Foods – NIN (Hyd)

16.5.14 Publications of NIN, Hyderabad

17. OBSTETRICS AND GYNECOLOGY (Duration: 18 Months)

Total hours: 250 (Theory: 150 Practical: 100)

17.1 Goals and Objectives

17.1.1 Goal:

The goal of teaching Obstetrics and Gynecology to undergraduate students is to provide them with the comprehensive knowledge of anatomy, physiology and pathophysiology of the reproductive system and gain the ability to optimally manage common problems.

17.1.2 Objectives:

17.1.2.1 **Knowledge:**

After the completion of the course, the student shall be able to:

17.1.2.1.1 Delineate the anatomy, physiology and pathophysiology of the reproductive system and the common conditions affecting it.

17.1.2.1.2 Detect normal pregnancy, labor, and puerperium.

17.1.2.1.3 Elucidate the leading causes of maternal and perinatal morbidity and mortality.

17.1.2.1.4 Understand the principles of contraception and various methods employed, methods of medical termination of pregnancy, sterilization and their complications.

17.1.2.1.5 Recognize the use, abuse and side effects of drugs in pregnancy, pre-menopausal and post-menopausal periods.

17.1.2.1.6 Explain the national programs of maternal and child health and family welfare and their implementation.

17.1.2.1.7 Assess different gynecological diseases and describe principles of their management.

17.1.2.1.8 Explain the indications, techniques and complications of procedures like Caesarean section, laparotomy, abdominal and vaginal hysterectomy, and vacuum aspiration for Medical Termination of Pregnancy (MTP).

17.1.2.2 **Skills:**

After the completion of the course, the student shall be able to:

17.1.2.2.1 Examine a pregnant woman, recognize high risk pregnancies and make appropriate referrals.

17.1.2.2.2 Recognize complications of delivery and provide postnatal care.

17.1.2.2.3 Recognize congenital anomalies of newborn.

17.1.2.2.4 Advise a couple on the use of various available contraceptive devices.

17.1.2.2.5 Perform pelvic examination, diagnose and manage common gynecological problems including early detection of genital malignancies.

17.1.2.2.6 Interpret data of investigations like biochemical, histopathological, radiological, ultrasound etc

17.1.2.3 **Integration**

At the completion of training, the student should be able to integrate knowledge of Obstetrics and Gynecology to manage related ailments and educate masses on family planning norms.

17.2 **Theory**

17.2.1 Obstetrics

17.2.1.1 Basic Anatomy and Physiology

17.2.1.1.1 Anatomy and Physiology of female reproductive organs and pelvis

17.2.1.1.2 Maturation and fertilization of ovum

17.2.1.1.3 Development of placenta

17.2.1.1.4 Embryology of uterus

17.2.1.2 Physiology of pregnancy

17.2.1.2.1 Maternal changes due to pregnancy

17.2.1.2.2 Diagnosis of pregnancy

17.2.1.2.3 Differential diagnosis of pregnancy

17.2.1.2.4 Fetus in normal pregnancy

17.2.1.2.5 Antenatal care

17.2.1.3 Physiology of labor

17.2.1.3.1 Causation and stages of labor

17.2.1.3.2 Mechanism of labor

17.2.1.3.3 Conduct of normal labor

17.2.1.4 Physiology puerperium

17.2.1.4.1 Phenomena of normal puerperium

17.2.1.4.2 Care of puerperium

17.2.1.4.3 Care of newborn child

17.2.1.5 Pathology of pregnancy

17.2.1.5.1 Hyperemesis gravidarum

17.2.1.5.2 Venereal diseases

17.2.1.5.3 Anemia in pregnancy

17.2.1.5.4 Diseases of the urinary system

17.2.1.5.5 Diabetes in pregnancy

17.2.1.5.6 Diseases and abnormalities of fetal membranes and placenta

17.2.1.5.7 Abortion

17.2.1.5.8 Ectopic pregnancy

17.2.1.5.9 Ante-partum hemorrhage

17.2.1.5.10 Placenta previa

17.2.1.6 Pathology of labor

17.2.1.6.1 Occipito-posterior position

17.2.1.6.2 Breech presentation

17.2.1.6.3 Prolapse of the cord, compound presentation

17.2.1.6.4 Multiple pregnancy

17.2.1.6.5 Contracted pelvis

17.2.1.6.6 Management of labor in contracted pelvis

17.2.1.6.7 Complications of 3rd stage of labor

17.2.1.7 Affection of new-born

17.2.1.7.1 Asphyxia neonatorum

17.2.1.7.2 Pre-term baby

17.2.1.7.3 Congenital malformations

17.2.1.8 Obstetrical operations

17.2.1.8.1 Forceps

17.2.1.8.2 Caesarean section

17.2.1.8.3 Induction of abortion and labor

17.2.1.9 Pathology of Puerperium – Puerperal infections

17.2.1.10 Miscellaneous:

17.2.1.10.1 Perinatal mortality and maternal mortality

17.2.1.10.2 Post-dated pregnancy

17.2.1.10.3 Placenta insufficiency

17.2.1.10.4 Control of contraception

17.2.1.10.5 Medical termination of pregnancy

17.2.1.10.6 Pre-term labor

17.2.1.10.7 Ultrasonogram in Obstetrics

17.2.1.11 Applied aspects in Obstetrics:

17.2.1.11.1 Yoga and Naturopathy for Healthy parenthood

17.2.1.11.2 Antenatal and postnatal care through Yogic methods

17.2.1.11.3 Antenatal and postnatal care through Naturopathic modalities

17.2.1.11.4 Antenatal and postnatal care through general exercises

17.2.1.11.5 Antenatal and postnatal care through Hydrotherapy

17.2.1.11.6 Natural diet during pregnancy and lactation

17.2.2 Gynecology

17.2.2.1 Anatomy of the female pelvic organs

17.2.2.1.1 External genitalia

17.2.2.1.2 Internal genitalia

17.2.2.1.3 Female urethra

17.2.2.1.4 Urinary bladder

17.2.2.1.5 Pelvic ureter

17.2.2.1.6 Rectum and Anal canal

17.2.2.1.7 Pelvic muscles

17.2.2.1.8 Pelvic fascia and cellular tissue

17.2.2.2 Blood vessels, lymphatic drainage and innervations of pelvic organs

17.2.2.2.1 Pelvic blood vessels

17.2.2.2.2 Pelvic lymphatics

17.2.2.2.3 Pelvic nerves

17.2.2.3 Puberty and Menopause

17.2.2.4 Neuroendocrinology in relation to reproduction

17.2.2.5 Menstruation

17.2.2.6 Examination of a gynecological patient and the diagnostic aids

17.2.2.6.1 History

17.2.2.6.2 Examination

17.2.2.6.3 Ancillary aids

17.2.2.6.4 Cytology

17.2.2.6.5 Colonoscopy

17.2.2.7 Pelvic infection

17.2.2.7.1 Defense of the genital tract

17.2.2.7.2 Acute pelvic infection

17.2.2.7.3 Chronic pelvic infection

17.2.2.7.4 Genital tuberculosis

17.2.2.8 Sexually transmitted diseases

17.2.2.9 Infections of the individual pelvic organs

17.2.2.9.1 Vulva

17.2.2.9.2 Bartholin’s gland

17.2.2.9.3 Vagina

17.2.2.9.4 Cervix

17.2.2.9.5 Endometrium

17.2.2.9.6 Fallopian tube

17.2.2.9.7 Ovary

17.2.2.9.8 Parametrium

17.2.2.10 Dysmenorrhea and other disorders of menstrual cycles

17.2.2.10.1 Dysmenorrhea

17.2.2.10.2 Dysfunctional uterine bleeding

17.2.2.11 Displacement of the uterus

17.2.2.11.1 Retroversion

17.2.2.11.2 Prolapse

17.2.2.11.3 Chronic inversion

17.2.2.12 Infertility

17.2.2.12.1 Causes

17.2.2.12.2 Investigations

17.2.2.12.3 Treatment

17.2.2.12.4 Assisted reproductive techniques

17.2.2.12.5 Counseling techniques

17.2.2.13 Benign lesions of the vulva and vagina

17.2.2.13.1 Vulval epithelial disorders

17.2.2.13.2 Vulval ulcers

17.2.2.13.3 Vulval and vaginal cysts

17.2.2.14 Benign lesions of the cervix

17.2.2.15 Benign lesions of the uterus

17.2.2.15.1 Fibroid

17.2.2.15.2 Polyps

17.2.2.16 Benign lesions of the ovary

17.2.2.17 Ovarian neoplasm

17.2.2.18 Endometriosis and adenomyosis

17.2.2.19 Premalignant lesions

17.2.2.19.1 Vulva

17.2.2.19.2 Vagina

17.2.2.19.3 Cervix

17.2.2.19.4 Endometrium

17.2.2.20 Genital malignancy

17.2.2.20.1 Cervical

17.2.2.20.2 Endometrial

17.2.2.20.3 Gestational trophoblastic neoplasia

17.2.2.20.4 Ovarian

17.2.2.21 Urinary problems in gynecology

17.2.2.21.1 Anatomy of the urethra-vesical unit

17.2.2.21.2 Genuine stress incontinence

17.2.2.21.3 Overflow incontinence

17.2.2.21.4 Retention of urine

17.2.2.21.5 Urinary tract infections

17.2.2.22 Genital fistulae

17.2.2.22.1 Genito-urinary

17.2.2.22.2 Recto-vaginal

17.2.2.23 Amenorrhea

17.2.2.23.1 Physiological

17.2.2.23.2 Primary

17.2.2.23.3 Secondary

17.2.2.24 Contraception

17.2.2.24.1 Barrier methods

17.2.2.24.2 Natural

17.2.2.24.3 IUCD

17.2.2.24.4 Steroidal

17.2.2.24.5 Emergency

17.2.2.24.6 Sterilization

17.2.2.25 Special problems

17.2.2.25.1 Abnormal vaginal discharge

17.2.2.25.2 Pruritis vulvae

17.2.2.25.3 Pelvic pain

17.2.2.25.4 Postmenopausal bleeding

17.2.2.25.5 Low backache

17.2.2.25.6 Breast in gynecology

17.2.2.25.7 Vaginismus

17.2.2.25.8 Dyspareunia

17.2.2.25.9 Hirsutism

17.2.2.25.10 Galactorrhoea

17.2.2.26 Operative gynecology

17.2.2.26.1 Postoperative care

17.2.2.26.2 Dilation of cervix

17.2.2.26.3 Dilation and curettage

17.2.2.26.4 Dilation of and insufflation

17.2.2.26.5 Hysterosalpingography

17.2.2.26.6 Cervical biopsy

17.2.2.26.7 Cryosurgery

17.2.2.26.8 Perineoplasty

17.2.2.26.9 Amputation of cervix

17.2.2.26.10 Abdominal hysterectomy

17.2.2.26.11 Vaginal hysterectomy

17.2.2.27 Endoscopic surgery in gynecology

17.2.2.27.1 Laparoscopy

17.2.2.27.2 Hysteroscopy

17.2.2.28 Applied aspects in Gynecology:

17.2.2.28.1 Role of Naturopathy and Yoga in Gynecology

17.2.2.28.2 Water treatments for gynecological disorders.

17.3 **Practical**

17.3.1 History taking of antenatal and gynecological cases

17.3.2 Demonstration of physical examination of antenatal and postnatal gynecological cases

17.3.3 Demonstration of conductive labor, normal delivery and use of minor instruments during delivery.

17.3.4 Demonstrations of instruments like Sim's speculum, Cusco's bivalve self-training vaginal speculum, Cervical dilators, Anterior vaginal wall retractor, Uterine curette

17.3.5 Specimens

17.3.6 X ray, US, and CT plates

17.3.7 Case-history writing of antenatal and gynecological cases

17.3.8 Demonstration of underwater delivery and painless delivery using acupuncture desired.

17.4 **Textbooks**

17.4.1 Clinical Obstetrics – Mudaliar and Menon

17.4.2 Textbook of Obstetrics and Gynecology – CS Dawn

17.4.3 Shaw's Gynecology

17.4.4 Textbook of Obstetrics and Gynecology - Dutta

18. YOGA THERAPY (Duration: 18 Months)

Total hours: 250 (Theory: 150 Practical: 100)

18.1 Goals and Objectives

18.1.1 Goal

The goal of teaching Yoga Therapy to undergraduate students is to provide them with comprehensive knowledge of Yoga and the physiological effects of various yogic practices and utilization of the same for therapeutic purposes.

18.1.2 Objectives:

18.1.2.1 **Knowledge:**

After the completion of the course, the student shall be able to:

18.1.2.1.1 Describe the physiological effects of various yogic practices like kriyas, asanas, pranayamas, mudras, bandhas, drishtis, Guided relaxation and Meditation.

18.1.2.1.2 Define rules and regulations of Yoga to be followed.

18.1.2.1.3 Understand the therapeutic aspects of Yoga as applied to different disease conditions.

18.1.2.1.4 Understand contraindications and indications of yogic practices in order to efficiently use Yoga as a therapy.

18.1.2.1.5 Understand the concept of health and disease in yogic lore and role of stress in disease causation and management of the same with Yoga.

18.1.2.1.6 Understand importance of food according to Yoga.

18.1.2.1.7 Delineate the importance of Yoga and mental health.

18.1.2.2 **Skills:**

After the completion of the course, the student shall be able to:

18.1.2.2.1 Utilize knowledge of Yoga therapy in managing various diseases.

18.1.2.2.2 Demonstrate usage of therapeutic aspect of Yoga in promotive, preventive, curative and rehabilitative therapy.

18.1.2.2.3 Institute remedial measures in Yoga for various disease conditions.

18.1.2.3 **Integration**

At the completion of training, the student should be able to integrate knowledge of Yoga and efficiently utilize the same for therapeutic purposes.

18.2 **Theory**

18.2.1 Introduction to Yogic Therapy / Basis of yogic Therapy

18.2.2 Role of Asanas in curing various diseases

18.2.3 Specific importance of Pranayama in curing various diseases

18.2.4 Vital role of Bandhas, Mudras, Drishtis, in curing various diseases

18.2.5 Role of Shat kriyas in curing various diseases

18.2.6 Role of general exercises in health and diseases

18.2.7 Sudarshan Kriya and other modern variants

18.2.8 The effects of various Yogic practices on different systems (skeletal system, endocrine system, nervous system, digestive system, respiratory system, excretory system, cardiovascular system, muscular system, reproductive system)

18.2.9 Research methods in yogic therapy, statistical analysis etc.

18.2.10 Yoga therapy for

18.2.10.1 Cardiovascular diseases

18.2.10.2 Psychiatric disorders

18.2.10.3 Musculoskeletal disorders

18.2.10.4 Nervous system disorders

18.2.10.5 Gastrointestinal disorders

18.2.10.6 Hormonal diseases

18.2.10.7 Respiratory diseases

18.2.10.8 Metabolic diseases

18.2.10.9 Ophthalmologic disorders

18.2.10.10 Pediatric disorders

18.2.10.11 ENT Disorders

18.2.10.12 OBG disorders

18.2.11 Meditation and its applications on psychosomatic disorders

18.2.12 Yoga and relaxation techniques

18.2.12.1 QRT – Quick Relaxation Technique

18.2.12.2 IRT – Instant Relaxation Technique

18.2.12.3 DRT – Deep Relaxation Technique

18.2.13 Teaching methods of Yoga to public, students and patients. Model lesson planning and adoption of Yoga in education system, limitations, vidhi and nishedha (right and wrong)

18.2.14 Advanced techniques of Yoga therapy (CM, PET, MSRT, MIRT, MEMT, VISAK, ANAMS, and SMET etc.)

18.2.15 Subtle Energy Medicine

18.2.16 Yoga and Mental Health: Total integration of personality, correct mental behavior and attitude, hormonal relationship of body and mind, self-content tranquilizing effect, psychology of spiritual growth and spiritual values, reasoning and judgment, pure consciousness, mode of living and disciplined life.

18.2.17 Drishtis

18.2.18 Stress management through Yoga

18.2.19 Applied Psychology

18.2.19.1 Historical perspective, identifying disorders

18.2.19.1.1 Anxiety disorders

18.2.19.1.2 Dissociative disorders

18.2.19.1.3 Somatoform disorders

18.2.19.1.4 Sexual disorders

18.2.19.1.5 Mood disorders

18.2.19.1.6 Personality disorders

18.2.19.1.7 Schizophrenia

18.2.19.2 Therapy for psychological disorders: psychotherapy, therapy of interpersonal relations, behavior therapy

18.2.20 Lesson planning and teaching methods in Yoga

18.2.21 Research in Yoga therapy

18.2.22 Recent advances in Yoga Therapy

18.3**Practical**

First three years' portions and:

18.3.1 LSP

18.3.2 QRT

18.3.3 IRT

18.3.4 DRT

18.3.5 TM

18.3.6 CM

18.3.7 SKY

18.3.8 SMET

18.3.9 PET

18.3.10 MSRT

18.3.11 MIRT

18.3.12 MEMT

18.3.13 VISAK

18.3.14 ANAMS.

18.4 **Reference Books**

18.4.1 Yogic Therapy – Vinekar

18.4.2 Yogic Therapy – Garde

18.4.3 Treatment of Common Diseases through Yoga – Swami Satyananda Saraswati

18.4.4 Seminar on Yoga, Science and Man – CCRYN, Delhi

18.4.5 Yoga for Healing – PS Venkateswaran

18.4.6 Handbook of Behavior Modification and Therapy – Plenum Press

18.4.7 Stress Management Research Papers – VK Yoga, Bangalore

18.4.8 All Bihar School of Yoga publications

19. HYDROTHERAPY

Total hours: 250 (Theory: 150 Practical: 100)

19.1 Goals and Objectives

19.1.1 Goal:

The goal of teaching Hydrotherapy and Mud Therapy to undergraduate students is to provide them with comprehensive knowledge of treating diseases using water and mud, and the physiological effects of various kinds of such applications, and utilisation of the same for therapeutic purposes.

19.1.2 Objectives:

19.1.2.1 Knowledge:

After the completion of the course, the student shall be able to:

19.1.2.1.1 Describe the properties and chemical composition of water and mud used for therapeutic purposes, physiology of the skin, production of heat and body temperature regulation, which are essential as a foundation for hydrotherapy.

19.1.2.1.2 Illustrate physiological effects of hot and cold water upon the different systems of the body and applications to reflex areas**.**

19.1.2.1.3 Explain action and reaction mechanisms and physiology, with their effects and uses

19.1.2.1.4 Demonstrate use of water in preservation, acute diseases, chronic diseases.

19.1.2.1.5 Show in-depth knowledge of general principles of hydrotherapy, therapeutic applications of water, along with therapeutic actions, indications and contra-indications; and classification of mud, storing of mud, modes of mud treatment, cosmetic uses of mud and research updates in hydrotherapy and mud therapy.

19.1.2.1.6 Demonstrate techniques and procedures of various types of hydriatic applications.

19.1.2.2 Skills:

After the completion of the course, the student shall be able to:

19.1.2.2.1 Utilize knowledge of hydrotherapy and mud therapy in managing various diseases.

19.1.2.2.2 Demonstrate usage of therapeutic aspect of hydrotherapy and mud therapy treatments in promotive, preventive, curative and rehabilitative therapy.

19.1.2.2.3 Institute and evaluate remedial measures in hydrotherapy for various disease conditions in clinical as well as research settings.

19.1.2.3 Integration

At the completion of training, the student should be able to integrate knowledge of hydrotherapy in various diseases and efficiently utilise the same for therapeutic purposes.

19.2 Hydrotherapy And Mud Therapy (Duration: 18 Months)

19.2.1 Introduction and History

19.2.2 Physical properties and chemical composition of water

19.2.3 Physiological basis of Hydrotherapy: The skin and its anatomical construction, functions of skin, temperature sense

19.2.4 Production of heat and its distribution in the body, regulation of the body temperature, conditions that increase and decrease heat production in the body, body heat and body temperature

19.2.5 Importance of water to human body

19.2.6 Physiological effects of water on different systems of the body

19.2.6.1 General and physiological aspects of heat upon: Skin, Respiration, Circulation, Nervous system, Heat and its production-dissipation etc, Tactile and temperature sense

19.2.6.2 General and physiological effects of cold upon: Skin, Respiration, Circulation, Nervous system, GIT, body temperature and its maintenance, circulatory system

19.2.7 Reflex areas of the body, results of application of hot and cold over reflex areas

19.2.8 Actions and reaction, incomplete reaction, conditions that encourage reaction, internal reaction, thermic reaction, modified thermic reaction

19.2.9 Place of water in preservation

19.2.10 Place of water in acute diseases

19.2.11 Place of water in chronic diseases

19.2.12 Magnesium sulphate – use in Hydrotherapy

19.2.13 General principles of Hydrotherapy

19.2.13.1 General rules of hydrotherapy

19.2.13.2 Therapeutic significance of reaction

19.2.13.3 Adaptation of individual cases

19.2.13.4 Exaggeration of symptoms under treatment, the untoward effects and how to avoid them

19.2.13.5 General indications and contra-indications

19.2.14 Therapeutic actions and use of Hydrotherapy

19.2.14.1 Classification of Hydriatic effects, general principles – excitation and depression

19.2.14.2 Primary excitant effects – when to apply and when not to apply

19.2.14.2.1 Local hemostatic effects – hydriatic heart tonics

19.2.14.2.2 Cardiac effects – Hydriatic heart tonics

19.2.14.2.3 Uterine excitations, emmenagogic effects

19.2.14.2.4 Vesical excitations

19.2.14.2.5 Intestinal excitation, peristaltic effects

19.2.14.3 Secondary excitant effects

19.2.14.3.1 Restorative effects

19.2.14.3.2 Tonic effects of cold water, physiological effects of cold water, cold water vs. medical tonics, application in the following: anemia, neurasthenia, rheumatism, diabetes mellitus, valvular heart diseases

19.2.14.3.3 Calorific effects

19.2.14.3.4 Diaphoretic effects

19.2.14.3.5 Importance of attention to the skin in chronic diseases – alternative and qualitative effect – hot baths in Bright's diseases, sweating baths in Dropsy and Obesity. Depurative or Eliminative effects, Toxemia in Rheumatism

19.2.14.3.6 Expectorant effects

19.2.14.3.7 Diuretic effects – Bright's Disease, Uremia - eclampsia

19.2.14.3.8 Atomic dyspepsia, hyperacidity

19.2.14.3.9 Revulsive and derivative effects, fluxion, revulsive methods for combating superficial anemia and for relief of deep congestion method adopted to anemia of deep-rooted organs revulsion on analgesic method

19.2.14.4 Resolvent effects

19.2.14.4.1 Sedative effects – general sedatives – local sedatives:

19.2.14.4.1.1 Sedatives of circulatory system – antiphlogistic effects, inflammation, pneumonia, pleurisy, other acute disorders

19.2.14.4.1.2 Nerve sedatives, hypnotic, calmative, analgesic, anesthetic, antispasmodic, insomnia, chorea, spastic paralysis, exophthalmia, goiter, mania, epilepsy and various painful conditions

19.2.14.4.1.3 Antithermic and antipyretic effects, relation to heat production and heat elimination to antipyretic methods, principles that govern the application of

hydriatic measures for the reduction of temperature in fevers, methods that may be efficiently employed in various morbid conditions accompanied by rise in temperature – suggestions, effects, indications and contraindications

19.2.14.4.1.4 Secretory and sedative effects prophylactic use - Cold bathing in infancy and early childhood, cold bathing for adults, cold baths for women, cold baths in old age - precautions

19.2.15 The techniques of Hydrotherapy

19.2.15.1 Water Baths

19.2.15.1.1 Plain water bath

19.2.15.1.2 Cold hip bath

19.2.15.1.3 Kellogg's and Kuhne's sitz bath

19.2.15.1.4 Shallow bath – for males and females

19.2.15.1.5 Arm and foot bath

19.2.15.1.6 Graduated bath

19.2.15.1.7 Natural bath

19.2.15.1.8 Non-revulsive bath

19.2.15.1.9 Immersion bath

19.2.15.1.10 Cold plunge

19.2.15.1.11 Whirlpool bath

19.2.15.1.12 Aeration bath

19.2.15.1.13 Vichy spray massage

19.2.15.1.14 Rapid bath

19.2.15.1.15 Brand bath

19.2.15.1.16 Fever bath

19.2.15.1.17 River bathing

19.2.15.1.18 Sea bathing

19.2.15.2 Various baths and air baths

19.2.15.2.1 Russian bath

19.2.15.2.2 Turkish bath

19.2.15.2.3 Steam bath

19.2.15.2.4 Local steam bath

19.2.15.2.5 Steam inhalation

19.2.15.2.6 Hot air bath

19.2.15.2.7 Local hot air bath

19.2.15.2.8 Super-hot air bath

19.2.15.2.9 Cold air bath

19.2.15.2.10 Indoor and outdoor bath

19.2.15.3 Pool therapy

19.2.15.3.1 Introduction

19.2.15.3.2 Principles of treatment part I and part II

19.2.15.3.3 Physiological and therapeutic effects of exercise in warm water

19.2.15.3.4 Indications and contraindications

19.2.15.3.5 Dangers and precautions

19.2.15.4 Douches

19.2.15.4.1 Cold Douche

19.2.15.4.2 Hot Douche

19.2.15.4.3 Neutral Douche

19.2.15.4.4 Alternative Douche

19.2.15.4.5 Underwater Douche

19.2.15.4.6 Contrast Douche

19.2.15.4.7 Horizontal Jet

19.2.15.4.8 Cephalic Douche

19.2.15.4.9 Lumbar Douche

19.2.15.4.10 Fan Douche

19.2.15.4.11 Rain Douche or Shower Douche

19.2.15.4.12 Hepatic Douche

19.2.15.4.13 Circular Douche and semi-circular Douche

19.2.15.4.14 Cerebrospinal Douche

19.2.15.4.15 Plantar Douche

19.2.15.4.16 Percussion Douche

19.2.15.4.17 Scotch Douche

19.2.15.5 Packs and compresses

19.2.15.6 Procedures that increase oxidation

19.2.15.7 Measures that encourage general and local metabolic activity

19.2.15.8 Procedures that increase general blood movement and local blood supply

19.2.15.9 Measures that increase heat production

19.2.15.10 Measures that increase the elimination of heat

19.2.15.11 Measures that combat bacterial development of blood

19.2.15.12 Measures that increase/lessen heat elimination

19.2.15.13 Hydriatic incompatibility

19.2.15.14 Adoption of hydriatic prescription of individual disease

19.2.15.15 Hydrotherapy as a means of rehabilitation and health promotion

19.2.15.16 Emergency treatments in Hydrotherapy

19.2.16 Mud Therapy

19.2.16.1 Introduction to Mud therapy

19.2.16.2 Classification of Mud for therapeutic use

19.2.16.3 Precautions for storing mud

19.2.16.4 Methods of treatment of mud

19.2.16.4.1 Applications

19.2.16.4.2 Packing

19.2.16.4.3 Hot poultices

19.2.16.5 Effect of Mud on different systems of body

19.2.16.6 Types of mud therapy applications

19.2.16.6.1 Natural mud bath

19.2.16.6.2 Full and partial mud packs

19.2.16.6.3 Mud plaster

19.2.16.6.4 Thermal bath

19.2.16.6.5 Dry pack

19.2.16.6.6 Sand pack and sand baths

19.2.16.7 Cosmetic uses of mud

19.2.16.8 Research in Hydrotherapy

19.2.16.9 Recent advances in Hydrotherapy

19.3**Practical**

19.3.1 Demonstration of various therapeutic effects, procedure and treatments in Hydrotherapy during clinical classes at the Hospital

19.3.2 At the end of the Final BNYS course, candidate should be in a position to give treatments independently

19.3.3 5 case documentation of all hydriatic applications

19.3.4 Clinical dissertation on case studies with minimum sample size of 20 patients on one general and two local applications

19.4 Textbooks

19.4.1 Baths – SJ Singh

19.4.2 My Water Cure – Sebastian Kneipp

19.4.3 Rational Hydrotherapy – JH Kellogg

19.4.4 Healing Clay –Michael Abserra

19.4.5 Our Earth Our Cure – Raymond Dextroit

19.5 References

19.5.1 Handbook of Hydrotherapy – Shew Joel

19.5.2 Hydrotherapy in Practice – Davis BC & Harrison RA

19.5.3 Medical Hydrology – Sidney Licht

20. PHYSICAL MEDICINE & REHABILITATION (Duration: 18 Months)

Total hours: 250 (Theory: 150 Practical: 100)

20.1 Goals and Objectives

20.1.1 Goal:

The goal of teaching Physical Medicine and Rehabilitation to undergraduate students is to provide them with the knowledge and skills needed for utilization of Physical medicine for therapeutic, rehabilitative purposes.

20.1.2 Objectives:

20.1.2.1 Knowledge:

After the completion of the course, the student shall be able to:

1.1.1.1.1 Define principles of basic physics that act as a foundation for physical medicine

1.1.1.1.2 Describe exercise therapy in detail, including starting positions, movements and their types, muscle strength, joint movement, relaxation, posture, co-ordination, gait, walking aids, neuromuscular facilitation, suspension therapy and their therapeutic applications, including allied modalities like heat treatments and cryotherapy.

1.1.1.1.3 Understand electrotherapy in terms of fundamentals, principles, laws of electricity and magnetism, practical and theoretical aspects of electrotherapeutic applications, such as faradic and galvanic currents, high frequency currents, laser, ultrasound, radiation therapy (IR & UV), TENS and IFT.

1.1.1.2 Skills:

After the completion of the course, the student shall be able to:

1.1.1.1.1 Demonstrate usage of therapeutic applications of physical medicine in promotive, preventive, curative and rehabilitative therapy, focusing on rehabilitation.

1.1.1.1.2 Institute remedial measures in Yoga for various disease conditions.

1.1.1.2 Integration

At the completion of training, the student should be able to integrate knowledge of various treatments used in Physical Medicine and efficiently utilise the same for rehabilitative and therapeutic purposes.

20.2**Theory**

20.2.1 Exercise therapy

20.2.1.1 Basic Physics in Exercise Therapy

20.2.1.1.1 Mechanics: Force, gravity, line of gravity, center of gravity in human body, base, equilibrium, axes and planes

20.2.1.1.2 Mechanical Principles: lever, order of lever, examples in human body, pendulum, spring

20.2.1.2 Introduction to exercise therapy

20.2.1.3 Starting positions: Fundamental starting positions, derived positions, muscle work for all the fundamental starting positions

20.2.1.4 Classification of movements in detail

20.2.1.4.1 Voluntary movements

20.2.1.4.2 Involuntary movements

20.2.1.5 Active movements

20.2.1.6 Passive movements

20.2.1.7 Muscle strength: Anatomy and physiology of muscle tissue, causes of muscle weakness/paralysis, types of muscle work and contractions, range of muscle work, muscle assessment, Principles of muscle strengthening/reeducation, early reeducation of paralyzed muscles

20.2.1.8 Joint movement: Classification of joint movements causes for restriction of joint movement, prevention of restriction of joints range of movement, principles of

mobilization of joint in increasing the range of motion. Technique of mobilization of stiff joint.

20.2.1.9 Relaxation: Techniques of relaxation, Principles of obtaining relaxation in various positions

20.2.1.10 Posture: types, factors responsible for good posture, factors for poor development of posture

20.2.1.11 Coordination exercises: Definition of coordinated movements, in coordinated movements, Principles of coordinated movements, technique of coordination exercise

20.2.1.12 Gait: Analysis of normal gait with muscles work, various pathological gaits

20.2.1.13 Crutch gait: introduction, crutch measurement, various types of crutch gait in detail

20.2.1.14 Neuromuscular facilitation techniques, functional reeducation

20.2.1.15 Suspension therapy: Principles of suspension, types of suspension therapy, effects and uses of suspension therapy with their application either to mobilize a joint to increase joint range of motion or increase muscle power, explaining the full details of the components used for suspension therapy

20.2.1.16 Myofascial Release Therapy and related therapies used in Sports Medicine

20.2.1.17 Therapeutic applications

20.2.2 Electrotherapy

20.2.2.1 Electrical fundamentals

20.2.2.1.1 Physical principles

20.2.2.1.2 Structure and properties of matter

20.2.2.1.3 Molecular atom, proton, neutron, electron, ion etc.

20.2.2.2 Electrical energy

20.2.2.2.1 Nature of electricity current

20.2.2.2.2 Static electricity

20.2.2.2.3 Electric potentials generated by cell

20.2.2.3 Ohm’s Law

20.2.2.4 Joule’s Law

20.2.2.5 Magnetic energy

20.2.2.5.1 Nature and property of a magnet

20.2.2.5.2 Magnetic induction

20.2.2.5.3 Shaw rule

20.2.2.5.4 Maxwell’s corkscrew rule

20.2.2.6 Electromagnetic induction

20.2.2.6.1 Principle and working of choke

20.2.2.6.2 Coil

20.2.2.6.3 Transformer

20.2.2.6.4 Rectification of AC to DC

20.2.2.6.5 Metal oxide rectifier

20.2.2.7 Semiconductor

20.2.2.7.1 Diode and Triode

20.2.2.8 Valves

20.2.2.9 Principles of working in a capacitor

20.2.2.9.1 Details of charging and discharging etc.

20.2.2.10 Transistors

20.2.2.11 measurement of current intensity

20.2.2.12 EMS and power

20.2.2.13 Moving coil milliammeter and voltmeter

20.2.2.14 Low frequency currents

20.2.2.14.1 Nature and principles of production of muscles stimulating currents

20.2.2.14.2 Types of low frequency currents used for treatment

20.2.2.14.3 Therapeutic electric stimulation

20.2.2.14.4 Ionotophoresis

20.2.2.14.5 Phonophoresis

20.2.2.15 Preparation for electrotherapy

20.2.2.15.1 Preparation of apparatus

20.2.2.16 Patient treatment technique

20.2.2.16.1 Stimulating muscles of extremity, back and face through the motor points

20.2.2.17 Faradic and Galvanic currents

20.2.2.18 High frequency current treatments

20.2.2.18.1 Physics of high frequency currents

20.2.2.18.2 Principles

20.2.2.18.3 Biophysics of heat physiology and cold.

20.2.2.18.4 Production, physiological and therapeutic effects and uses.

20.2.2.18.5 Technique of treatment, dangers and precautions, contraindications of:

20.2.2.18.5.1 Ultrasonic therapy

20.2.2.19 Principles of radiation therapy

20.2.2.19.1 Physics of radiation therapy

20.2.2.19.2 Laws governing radiation: Production, physiological and therapeutic effects, uses, techniques of treatment, dangers and precautions, contraindications etc. of:

20.2.2.19.2.1 IRR therapy

20.2.2.19.2.2 UV therapy

20.2.2.19.3 Basic principles of TENS and IFT

20.2.2.19.4 Laser Therapy

20.2.2.20 Wax therapy

20.2.2.20.1 Physics of wax therapy

20.2.2.20.2 Physiological and therapeutic effects and uses

20.2.2.20.3 Techniques of application

20.3**Practical Electrotherapy**

20.3.1 Interrupted/modified DC

20.3.1.1 Stimulation of muscles directly

20.3.1.2 Diagnostic tests:

20.3.1.2.1 FG test

20.3.1.2.2 SD curve

20.3.1.2.3 Fatigue test

20.3.1.3 Uses of surged Faradism and interrupted Galvanism in various peripheral nerve lesions

20.3.1.3.1 Neuropraxia

20.3.1.3.2 Axonotmesis

20.3.1.3.3 Neurotmesis

20.3.2 High Frequency current treatment

20.3.2.1 UV radiation: Setting up of apparatus selection of lamps technique of application of UVR for various conditions like test dose, general body bath, acne vulgaris, alopecia areata and totalis, ulcers, psoriasis, rickets and general debility patients.

20.3.2.2 Ultrasonics: Setting up of apparatus, selection of dose, and technique of application of various conditions and to various parts of the body.

20.3.2.3 Laser – setting up apparatus including selection of method, technique, preparation of patient, checking contraindications, application for various conditions and parts of the body.

20.4 **Practical Exercise Therapy**

20.4.1 Demonstration and practice of active and passive movements

20.4.2 Demonstration and practice of putting suspension to shoulder joint and elbow joint in upper limbs, hip and knee joints in lower limbs for all movements. Demonstration of total suspension.

20.4.3 Muscle strength: Demonstration and practice of strengthening, reeducation of weak/paralyzed muscles of both upper and lower extremity, individual group muscles, abdominal muscle exercises

20.4.4 Joint movement: Demonstration and practice of techniques to improve joint range of motion of hip joint, knee joint, ankle and foot, shoulder, elbow joint, radio-ulnar joint, wrist, etc

20.4.5 Demonstration and practice of free exercise to improve joint range of motion (Small joint, Eg: Hand, fingers, toes, etc). Demonstration and practice of all crawling exercises, faulty posture, correcting techniques etc.

20.4.6 Demonstration of various pathological gaits.

20.4.7 Measurement of crutches, walking aids, strengthening muscles, crutch balance, demonstration and practice of all crutch gaits.

20.4.8 Breathing exercises: Demonstration and practice of diaphragmatic breathing, localized expansion exercises.

20.4.9 Passive stretching: Techniques of passive stretching to sternomastoid muscle, shoulder abductors, elbow flexors, supinator, wrist and finger flexors in upper limbs, passive stretching to hip flexors, adductors, iliotibial band, tensor fascia Lata, quadriceps, knee flexors, tendo-achilles, etc.

20.5 **Reference Books**

20.5.1 Principles of Exercise therapy – Dina Gardiner

20.5.2 Tidy's Physiotherapy

20.5.3 Cash's Textbook of Physiotherapy

20.5.4 Clayton's Electrotherapy

21. FIRST AID AND EMERGENCY MEDICINE (Duration: 18Months)

Total hours: 200 (Theory: 100 Practical: 100)

21.1 Goals and Objectives

21.1.1 Goal:

The goal of teaching First Aid and Emergency Medicine to undergraduate students is to provide them with the skills and knowledge required to manage medical emergencies efficiently.

20.1.3 Objectives:

20.1.3.1 Knowledge:

After the completion of the course, the student shall be able to:

20.1.3.1.1 Illustrate working knowledge about Golden hour

20.1.3.1.2 Describe quick assessment and recognition of emergency conditions.

20.1.3.1.3 Demonstrate specific first aid measures and emergency treatments used for handling emergency cases before and after diagnosis of the condition.

20.1.3.2 Skills:

After the completion of the course, the student shall be able to:

20.1.3.2.1 Demonstrate usage of first aid procedures in various emergency situations

20.1.3.2.2 Describe assessment of emergencies and treatment of the same with suitable procedures.

20.1.3.2.3 Possess the knowledge and skills to perform Basic Life Support procedures in the Golden Hour.

20.1.3.2.4 Able to assess the severity of an emergency condition so as to act in accordance and take necessary steps to prevent further complications.

20.1.3.3 Integration

At the completion of training, the student should be able to effectively use his/her knowledge of assessment and management of medical emergencies in his/her professional practice.

21.2 First Aid

21.2.1 General principles of first aid-definition, principles, responsibilities and golden rules

21.2.2 Resuscitation techniques-basic life support, mouth to mouth ventilation, artificial ventilation, Sylvester method.

21.2.3 Unconsciousness and general principles of treatment, recovery position

21.2.4 Transportation and handling of patient

21.2.5 Hemorrhage and bleeding

21.2.6 Shock

21.2.7 Wounds

21.2.8 Bandages, dressing and slings

21.2.9 Fractures, sprains and strains

21.2.10 Poisoning

21.2.11 Asphyxia, Aspiration, drowning, suffocation and strangulation

21.2.12 Road accidents

21.2.13 Effect of temperature, sunburn, hypothermia, frost bite, heat exhaustion, heat stroke

21.2.14 Burns and scalds, electrical injuries

21.2.15 Head injury, chest injury, blast injury, crush injury

21.2.16 Sports injuries

21.2.17 Epilepsy-febrile convulsions

21.2.18 Syncope

21.2.19 Dog bite, snake bite, scorpion bite and bee sting

21.2.20 Emergencies in diasthetic patients and cardiac patients

21.3**Recognition, Evaluation of Clinical Emergencies**

21.3.1 CVS

21.3.1.1 Acute myocardial infarction

21.3.1.2 Cardiogenic shock

21.3.1.3 Cardiac arrhythmias

21.3.1.4 Cardiac arrest

21.3.1.5 Hypertensive emergencies

21.3.1.6 Pulmonary embolism

21.3.1.7 Dissection of aortic aneurysm

21.3.1.8 Cardiac tamponade

21.3.1.9 DVT

21.3.2 Respiratory System

21.3.2.1 Hemoptysis

21.3.2.2 Status asthmaticus

21.3.2.3 Spontaneous pneumothorax

21.3.2.4 Acute respiratory failure

21.3.2.5 Massive pulmonary collapse

21.3.2.6 Acute laryngeal obstruction

21.3.2.7 ARDS

21.3.2.8 Pneumonia

21.3.2.9 Massive pleural effusion

21.3.3 Gastrointestinal System

21.3.3.1 Acute vomiting

21.3.3.2 Perforation of Peptic Ulcer

21.3.3.3 Hematemesis

21.3.3.4 Hepatic Pre coma and coma

21.3.3.5 Acute pancreatitis

21.3.3.6 Acute pain in abdomen

21.3.3.7 Obstruction of intestine

21.3.4 Nervous System

21.3.4.1 Unconscious patient

21.3.4.2 Cerebrovascular catastrophes

21.3.4.3 Convulsions

21.3.4.4 Status epilepticus

21.3.4.5 TIA

21.3.4.6 Spinal cord injuries

21.3.4.7 Brain death

21.3.4.8 Head injury

21.3.4.9 Acute ascending polyneuritis

21.3.5 Renal System

21.3.5.1 Acute renal failure

21.3.5.2 Renal colic

21.3.5.3 Hematuria

21.3.5.4 Hyperkalaemia

21.3.5.5 Hypokalaemia

21.3.5.6 Hypernatrimia

21.3.6 Endocrine and Metabolism

21.3.6.1 Thyroid crisis

21.3.6.2 Adrenal crisis

21.3.6.3 Diabetic ketoacidosis and coma

21.3.6.4 Hypoglycemia

21.3.6.5 Tetany

21.3.6.6 Hypercalcemia

21.3.7 Miscellaneous Emergencies

21.3.7.1 Syncope

21.3.7.2 Acute peripheral circulatory failure

21.3.7.3 Anaphylaxis

21.3.7.4 Hypothermia

21.3.7.5 Hyperpyrexia

21.3.7.6 Poisoning

21.3.7.7 Drug overdose

21.4 **Practical**

21.4.1 History taking and physical examination of cases

21.4.2 Case sheet writing in different general cases (25)

21.4.3 Demonstration of equipment and instruments used for investigation in modern diagnostics

21.4.4 Demonstration tour of an ultra-modern super specialty hospital to see the latest techniques management of emergency conditions

21.5 **Textbooks**

21.5.1 Hutchison's Clinical Methods

21.5.2 Manual of Clinical Methods – PS Shankar

21.5.3 First Aid – Red Cross Society

21.5.4 First Aid – St. John Ambulance Association

21.5.5 First Aid – LC Gupta

21.5.6 Bailey and Love's Short Practice of Surgery

21.5.7 Harrison's Principle of Internal Medicine

21.5.8 Davidson's Principle and Practice of Medicine

21.5.9 Medical Emergency, Diagnosis and Management

22. CLINICAL NATUROPATHY (Duration: 18 months)

Total hours: 300 (Theory: 200 Practical: 100)

20.2 Goals and Objectives

20.2.1 Goal:

The goal of teaching Clinical Naturopathy to undergraduate students is to train them to provide well integrated clinical service in Naturopathy.

19.1.3 Objectives:

19.1.3.1 **Knowledge:**

After the completion of the course, the student shall be able to:

19.1.3.1.1 Illustrate decision making in Naturopathy.

2.24.3.1.2 Understand the basic principles of screening and prevention of disease.

2.24.3.1.3 Comprehend the scope of practice- patterns of use, fields of practice, regulations, limitations.

2.24.3.1.4 Understand the concept of healing and disease crises and management of the same.

2.24.3.1.5 Understand the pathogenesis of the disease in Naturopathy basis and preventive measures of the same.

2.24.3.1.6 Create a specific module of therapy for the particular patient with varied presentations.

2.24.3.2 Skills:

After the completion of the course, the student shall be able to:

2.24.3.2.1 Apply his /her knowledge of clinical Naturopathy in managing various diseases.

2.24.3.2.2 Demonstrate usage of therapeutic aspect of clinical Naturopathy in curative and rehabilitative therapy.

2.24.3.2.3 Utilize his/ her knowledge of clinical Naturopathy for prevention of disease and promotion of health.

2.24.3.3 Integration

At the completion of training, the student should be able to integrate knowledge of clinical Naturopathy and efficiently utilize the same for therapeutic purposes.

22.2**Theory**

22.2.1 Good Clinical Practice

22.2.1.1 Guidelines and Standards

22.2.2 Decision-making in Naturopathy

22.2.3 Screening and Prevention of Disease

22.2.3.1 Basic principles of screening

22.2.4 Scope of practice

22.2.4.1 Patterns of use

22.2.4.2 Fields of practice

22.2.4.3 Regulations

22.2.4.4 Limitations

22.2.5 Cardinal manifestations and presentation of disease

22.2.6 Naturopathic prescription-making and algorithmic line of management for the following diseases:

Abscess, Acid-Peptic Disease, Acne, AIDS, Aging, Allergies, Alopecia, Alzheimer's disease, Anal fissures, Anemia, Anorexia nervosa, Anxiety disorders, Appendicitis, Arthritis – OA & RA, Asthma, ADD/ADHD, Back pain, Bad breath, Bedsore, Bladder infection, Bronchitis, Bruise, Bursitis, Cancer - Breast cancer, Cervical cancer, Colorectal cancer, Leukemia, Lung cancer, Prostate cancer, Skin cancer, Stomach cancer, Uterine cancer; Dental caries, Cardiovascular disease, Cerebrovascular disease, Chlamydia, Chloasma (Age spots), Chronic fatigue syndrome, Cirrhosis, Common cold, Colic, Colitis, Nasal congestion, Conjunctivitis, Constipation, Menstrual cramps, Crohn's disease, Cuts (cuts, wounds and scratches), Cyst, Cystitis, Dandruff, Deep venous thrombosis, Clinical depression, Dermatitis, Diabetes, Diarrhea, Diverticulitis, Dizziness, Duodenal ulcer, Dysmenorrhea, Dyspepsia, Diabetes mellitus, Earache, Earwax blockage, Eczema, Edema, Emphysema, Endometriosis, Epilepsy, Erectile dysfunction, External otitis, Fainting, Farsightedness, Fatigue, Fever, Fibromyalgia, Flatulence, Flu, Folliculitis, Food poisoning, Foot odor, Gallstones, Gas, Gastritis, Gastroenteritis, GERD, Gingivitis, Goiter, Gout, Headache, Heatstroke, Hemorrhoids, Hepatitis, Hernia, Herpes (genital), Obesity, Oligomenorrhea, Oral cancer, Ovarian cyst, Parkinson's disease, PID, Phlebitis, PMS, Postnasal drip, PTSD, Rashes (hives), Raynaud's disease, Sciatica, SAD, Seizure disorder, Sinusitis, Snoring, Sore throat, Scoliosis, Sprains, Acute Abdomen.

22.2.7 Pathophysiology

22.2.8 Management of pains

22.2.8.1 Pain sensory systems

22.2.8.2 Chronic pain

22.2.8.3 Types of pain

22.2.8.3.1 Chronic discomfort and palpitation

22.2.8.3.2 Abdominal pain

22.2.8.3.3 Headache

22.2.8.3.4 Back, neck pain

22.2.9 Fever, hyperthermia

22.2.10 Fever, rashes

22.2.11 Fever of unknown origin

22.2.12 Hypothermia & frostbite

22.2.13 Syncope, faintness, dizziness, vertigo

22.2.14 Weakness, disorders of movements and imbalance

22.2.15 Numbness, tingling and sensory loss

22.2.16 Aphasia, memory loss and other focal cerebral disorders

22.2.17 Sleep disorders

22.2.18 Dyspnea, cough

22.2.19 Edema

22.2.20 Dysphasia, nausea, vomiting and indigestion

22.2.21 Diarrhea, constipation

22.2.22 Weight loss

22.2.23 Jaundice, abdominal swelling

22.2.24 Sexual dysfunction

22.2.25 Healing crisis and Disease crisis

22.2.26 Approach to the patient in Naturopathic medicine with:

22.2.26.1 Skin disease

22.2.26.2 Cardiovascular disease

22.2.26.3 Disease of respiratory system

22.2.26.4 Gastrointestinal disorders

22.2.26.5 Liver and pancreatic disease

22.2.26.6 Articular and musculoskeletal disorder

22.2.26.7 Neurological disease

22.2.26.8 Renal disorders

22.2.26.9 Endocrinal disorders

22.2.26.10 Menstrual disorders

22.2.26.11 Peripheral neuropathy

22.2.27 Dictum of cure in Naturopathic medicine

22.2.27.1 Identify and remove the root cause

22.2.27.2 Eliminate the toxins

22.2.27.3 Supplement of the vital energy or nerve energy

22.2.28 Important modes and methods for natural rejuvenation

22.2.29 Research in Clinical Naturopathy

22.2.30 Recent Advances in Clinical Naturopathy

Note: Apart from the above-listed conditions, other clinical conditions may be discussed but the above-listed conditions are mandatory.

22.3**Practical**

22.3.1 Case-history taking, documentation and complete management protocol of at least 30 cases.

22.3.2 Clinical dissertation on any one disease involving multiple patients.

22.4**Textbooks**:

22.4.1 Clinical Naturopathy: An Evidence-Based Guide to Practice-Jerome Sarris, Jon Wardle

22.4.2 Clinical Naturopathic Medicine - Leah Hechtman

22.4.3 The Clinician's Handbook of Natural Medicine - Joseph E. Pizzorno Jr.

22.4.4 Fasting-The Ultimate Diet - Allan Cott

22.4.5 Mucusless Diet Healing System - Arnold Ehret

22.4.6 The Fasting Cure (Classic Reprint) - Upton Sinclair

22.4.7 Fasting Can Save Your Life - Herbert M. Shelton

23. RESEARCH METHODOLOGY & RECENT ADVANCES (Duration 12 months)

Total hours: 200 (Theory: 100 Practical: 100)

23.1 Goals and Objectives

23.1.1 Goal:

The goal of teaching Research Methodology and Recent advances to undergraduate students is to provide them with the latest updated scientific, knowledge in the field of Naturopathy and Yoga and introduce them to research methodology.

23.1.2 Objectives:

23.1.2.1 **Knowledge:**

After the completion of the course, the student shall be able to:

2.24.4.1.1 Describe research methodology under process, materials and methods, design of a study, literature review, ethics, sampling, measurement tools, data organisation, statistics, data analysis, reliability and validity, etc, and implement this knowledge in practically designing, conducting, evaluating and publishing a study.

2.24.4.1.2 Illustrate statistics and probability theory.

2.24.4.1.3 Use technological aids for preparing research reports.

2.24.4.1.4 Demonstrate knowledge about inter-disciplinary research.

2.24.4.2 Skills:

After the completion of the course, the student shall be able to:

2.24.4.2.1 Prepare a research study, conduct, evaluate and publish it.

2.24.4.2.2 Interpret research findings and analyse whether data is significant or not.

2.24.4.3 Integration

At the completion of training, the student should be able to integrate knowledge of clinical Naturopathy and Yoga with skills in research methodology to conduct and publish research studies in the field, to help shift the basis of Naturopathy and Yoga to an evidence-based science.

23.2 Research Methodology

23.2.1 The research processes. Methodology and methods.

23.2.2 The design of a study.

23.2.3 Literature review.

23.2.4 Ethics of research.

23.2.5 Types of common designs. Their advantages and disadvantages.

23.2.6 Sampling.

23.2.7 The experimental and quasi-experimental methods. Correlation studies.

23.2.8 Measurement tools: Observations, questionnaires and others.

23.2.9 Data organization in Excel and SPSS.

23.2.10 Descriptive statistics. Measures of central tendency, measures of dispersion. Correlation coefficients.

23.2.11 Graphical representations of data. Simple graphs, the box and whiskers plot.

23.2.12 Reliability. The different ways of measuring reliability.

23.2.13 Validity. Types of validity.

23.3**Inferential Statistics and Probability Theory (20 hours)**

23.3.1 Inferential statistics – populations and samples.

23.3.2 Elementary concepts in probability theory

23.3.3 The normal distribution. Z-values and probability

23.3.4 Calculating probabilities when population parameters are known

23.4**Research Reports (10 hours)**

23.4.1 Microsoft word, excel and power point

23.4.2 Reading research reports

23.4.3 Writing research reports

23.4.4 Presentations

23.5**Other streams (20 hours)**

23.5.1 Inter-Disciplinary Research

23.5.2 Introduction to research in Management studies

23.5.3 Introduction to research in Education, History, and Anthropology.

23.5.4 Introduction to research in social studies and Humanity.

23.5.5 Introduction to research in Linguistics

23.5.6 Introduction to research in Jurisprudence.

23.5.7 Introduction to research in science and technology

23.6 **Practical**

23.6.1 Dissertation on any one research study (basic or clinical with sample size of minimum 10). Presentation of dissertation.

23.6.2 Research paper interpretation and presentation

23.6.3 Single case study from hospital

23.7 **Textbooks:**

23.7.1 Kothari, C.R.: Research Methodology, Methods and Techniques (VishwaPrakashan, New Delhi, 1985)

23.7.2 Telles, S.: Research Methods (Swami Vivekananda YogaPrakashan, Bangalore)

23.8**Reference:**

23.8.1 Robin Monro: Yoga research bibliography scientific studies on Yoga and meditation (Yoga Biomedical Trust, England 1989)

23.8.2 Michael H. Cohen: Complementary and Alternative Medicine: Legal Boundaries and regulatory Perspectives (Paperback - Aug 19, 1997)

23.8.3 Jerrold H. Zar: Biostatistical Analysis person education.

23.8.4 Russell A. Jones: Research Methods in the Social and behavioral science (Sinauer Associates, Saunderland's Massachusetts)

23.8.5 A.K. Singh: Tests, Measurements and Research Methods in Behavioral Sciences (BharatiBhavan Publishers)

23.8.6 J.N.S. Matthews: An Introduction to randomized controlled clinical trials (Arnold, London)

23.8.7 J.S.P. Lumley: Research: - Some Ground Rules W. Benjamin (Oxford University Press)

23.8.8 Herman J. Ader: Research Methodology in the life, behavioral and social Sciences Gideon J. Mellebeegh (SAGE Publications).

SECTION V

TEACHING OF MEDICAL ETHICS IN BNYS COURSE

1. Introduction

Medical ethics is a systematic effort to work within the ethos of medicine, which has traditionally been service to sick.

There is now a shift from the traditional individual patient doctor relationship of medical care. With the advances in science and technology and the needs of patients, their families and the community, there is an increased concern with the health of the society. There is a shift to greater accountability to the society. Doctors and other health professionals are confronted with many ethical problems. It is, therefore, necessary to be prepared to deal with these problems.

In keeping with its goal to improve quality of education, Rajiv Gandhi University of Health Sciences recommends introduction of medical ethics in the regular teaching of BNYS course beginning from first year and continuing till the end of internship.

2. Objectives

The objectives of teaching medical ethics should be to enable the students develop the students to develop the ability to:

1. Identify underlying ethical issues and problems in medical practice
2. Consider the alternatives under the given circumstances, and
3. Make decisions based on acceptable moral concepts and also traditions and practices

3. Course contents (Syllabus)

a. Introduction to medical ethics

- What are Ethics
- What are values and norms
- Relationship between being ethical and human fulfillment

- How to form a value system in one's personal and professional life
- **Heteronomous Ethics and Autonomous Ethics**
- Freedom and Personal Responsibility

b. Definition of Medical Ethics

- Difference between medical ethics and bioethics
- Major principles of Medical Ethics:
- Beneficence = Fraternity
- Justice = Equality
- Self-determination (autonomy) = Liberty

c. Perspectives of Medical Ethics

- The Hippocratic Oath
- The Declaration of Helsinki
- The WHO Declaration of Geneva
- International Code of Medical Ethics (1983)
- Medical Council of India Code of Ethics

d. Ethics of the Individual

- Patient as a person
- Right to be respected
- Truth and confidentiality
- Autonomy of decision
- Concept of disease, health and healing
- Right to health

- Ethics of behavior modification
- Physician-patient relationship
- Organ donation

e. Ethics of Human Life

- What is human life?
- Criteria for distinguishing human and non-human
- Reasons for respecting human life
- Beginning of human life
- Conception, contraception
- Abortion
- Prenatal sex-determination
- In vitro Fertilization (IVF)
- Artificial Insemination by Husband (AIH)
- Artificial Insemination by Donor (AID)
- Surrogate motherhood
- Semen Intra fallopian Transfer (SIFT)
- Gamete Intra fallopian Transfer (GIFT)
- Zygote Intra fallopian Transfer (ZIFT)
- Genetic Engineering

f. Family and Society in Medical Ethics

- Ethics of human sexuality
- Family planning perspectives

- Prolongation of life
- Advanced life directives – The Living Will
- Euthanasia
- Cancer and Terminal Care

g. Death and Dying

- Use of life-support systems
- Death awareness
- The moment of death
- Prolongation of life
- Ordinary and extraordinary life support
- Advanced life directives
- Euthanasia – passive and active
- Suicide – the ethical outlook
- The right to die with dignity

h. Professional Ethics

- Code of conduct
- Contract and confidentiality
- Charging of fees, Fee-splitting
- Prescription of drugs
- Over-investigating the patient.
- Low-cost drugs, vitamins and tonics
- Allocation of resources in health care

i. Research Ethics

- Animal and experimental research/humanness
- Human experimentation
- Human volunteer research – Informed
- Consent Drug Trials

j. Ethical Work-up of Cases

- Gathering all scientific factors
- Gathering all human factors
- Gathering all value factors
- Identifying areas of value – conflict
- Setting of priorities
- Working out criteria towards decisions

4. **Teaching/Learning Experience**

Classroom teaching would focus on professional relationship, patient-doctor relationship, issues at the beginning and end of life, reproductive technologies, resource allocation and health policy. It will also deal with values, ethical concepts and principles. Clinical ethics must be taught as part of bedside teaching. Group discussions, case studies, problem analyzing, and problem-solving exercises may also be employed.

The teacher involved in teaching ethics should show how the ethical principles are applied on a day-to-day and patient to patient basis by demonstrating by example, how to identify and resolve a particular problem, increasing the awareness and knowledge of students of students the value dimensions of interactions with patients, colleagues, relations and public.

Fostering the development of skills of analysis, decision making and judgment. Making the students aware of the need to respect the rights of the patient as also duties and responsibilities of the doctor.

5. Evaluation

All major subjects should have at least one short answer question on Medical Ethics appropriate for the subject introduced in the University question paper, and a few questions may be asked in the viva voce examination, e.g., basic principles of informed consent, confidentiality, etc.

6. Recommended Reading

a. Francis CM, Medical Ethics, II Ed, 2004, Jaypee Brothers, New Delhi, Rs. 150/-

b. Ethical Guidelines for Biomedical Research on Human Subjects, Indian Council of Medical Research, New Delhi. 2000.

ANNEXURE-I

DIFFERENT METHODS RECOMMENDED FOR INTERNAL ASSESSMENT

National Institute of Naturopathy (NIN), Pune, has given some examples of methods of Internal assessment of students, which may be followed by the colleges. They are:

1. Credit for preparation and presentation of seminars by students.
2. Preparation of clinical case for presentation
3. Clinical case study/problem solving exercises.
4. Participation in project for health care in the community
5. Proficiency in conduction a small research project or assignment
6. Multiple choice questions (MCQ) test after completion of a chapter/system

Each time shall be objectively assessed and recorded. Some of the items can be assigned as homework/vacation work.

ANNEXURE-II

A COMPREHENSIVE LIST OF SKILLS RECOMMENDED AS DESIRABLE FOR BACHELOR OF NATUROPATHY AND YOGIC SCIENCES (BNYS) GRADUATE

1. Clinical evaluation
   a. To be able to take a proper and detailed history.
   b. To perform a complete and thorough physical examination and elicit clinical signs.
   c. To be able to properly use the stethoscope, blood pressure apparatus, otoscope, thermometer, nasal speculum, etc.
   d. To be able to perform internal examination-per rectum (PR), per-vaginum (PV), etc.
   e. To arrive at a proper clinical diagnosis
2. Bedside diagnostic tests
   a. To do and interpret hemoglobin (Hb), total count (TC), erythrocyte sedimentation rate (ESR), blood smear for parasites, urine examination/albumin/sugar/ketones/microscopy.
   b. Stool exam for ova and cysts.
   c. To do gram's stain and Ziehl-Nielsen stain for AFB.
   d. To do skin smear for leprae bacilli.
   e. To do and examine a wet film vaginal smear for Trichomonas.
   f. To do a skin scraping and potassium hydroxide (KOH) stain for fungal infections.
   g. To perform and read Mantoux test.
3. Ability to carry out procedures.
   a. To conduct CPR (Cardiopulmonary resuscitation) and First Aid in newborns, children and adults
   b. To administer enema
4. Pediatrics
   a. To assess newborns and recognize abnormalities and IU retardation.
   b. To teach infant feeding to mothers
   c. To monitor growth by the use of 'road to health chart' and to recognize development retardation.
   d. To assess dehydration and prepare and administer Oral Rehydration Therapy (ORT)
   e. To recognize ARI clinically
5. Community Health

a. To be able to supervise and motivate community and paraprofessionals for corporate efforts for health care.
b. To be able to carry on managerial responsibilities, e.g., Management of stores, indenting, stock keeping and accounting.
c. Planning and management of health camps
d. Implementation of national health programs
e. To effect proper sanitation measures in the community, e.g., disposal of infected garbage, chlorination of drinking water
f. To identify and institute control measures for epidemics including its proper data collecting and reporting.

6. Management of emergencies
a. To manage acute anaphylactic shock
b. To manage peripheral vascular failure and shock
c. To manage acute pulmonary edema and LVF
d. Emergency management of drowning, poisoning and seizures
e. Emergency management of bronchial asthma and status asthmaticus
f. Emergency management of hyperpyrexia
g. Emergency management of comatose patients regarding airways, positioning prevention of aspiration and injuries
h. Assess and administer emergency management of burns.