SVYASA School of Yoga & Naturopathic Medicine
Curriculum – 2024

CONTENTS

1.0. 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 Swami Vivekananda Yoga Anusandhana Samsthana (Deemed to be University, under section 3 of the UGC act, 1956) 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 – 2018, following the review and revision of the syllabus through the Board of studies and Academic Council.

First year BNYS is of 1½ year duration and consists of pre-clinical subjects and subjects describing Anatomy, Physiology, Biochemistry and Philosophy of Naturopathy, Principles of Yoga and Sanskrit. The duration of second year BNYS is 1 year and consists of Para-clinical subjects such as Pathology, Microbiology, Community Medicine, Basic Pharmacology, Forensic Medicine, and *Yoga* Philosophy, and Color therapy and magneto biology. The duration of third year BNYS is of 1-year and consists of Para-clinical subjects and Yoga and Naturopathy clinical subjects, Manipulative Therapies, Acupuncture and Acupressure, *Yoga* and its applications, Nutrition and Medicinal Herbs, Naturopathy Diagnosis and Modern Diagnosis, Psychology and Basic Psychiatry. Final year BNYS is of 1-year duration and consists of clinical

subjects such as Obstetrics and Gynecology, *Yoga* therapy, Hydrotherapy and Mud therapy, Physical medicine and Rehabilitation, First Aid and Emergency Medicine, Clinical Naturopathy and Research Methodology and Recent Advances. Following the successful completion of the Final year BNYS examinations, one-year compulsory rotatory internship is a mandatory requirement for completion of BNYS program.

In Section I, goals of BNYS course are described. Section II gives general objectives. Section III is about the regulations describing admission procedure, duration of the course, recommendations regarding attendance, internal assessment, distribution of marks for various subjects in professional examinations and eligibility for examinations, and criteria for pass and rules and regulations of the internship. Section IV describes the details year-wise syllabus for the theory and practical subjects.

2.0. GOALS OF BNYS COURSE

1. Recognize the health needs of the community, and carry out professional obligations ethically and keeping with the objectives of the national health policy;
2. Develop the skills in most of the competencies, and training that are required to deliver the Yoga and Naturopathy health care system;
3. Become aware of the contemporary advances and developments in the system of Yoga and Naturopathy;
4. Acquire a spirit of scientific inquiry and is oriented to the principles of research methodology and epidemiology;
5. Become proficient in the profession by developing scientific temper and improve educational experience;
6. Identify social, economic, environmental, biological, emotional and spiritual determinants of health in a given case and take them into account while planning preventive, promotive, therapeutic and rehabilitative,

measures/strategies;

7. Plan and devise measures in Yoga and Naturopathy for the prevention and rehabilitation of patients suffering from disease and disability;
8. Demonstrate skills in documentation of individual case details as well as morbidity data relevant to the assigned situation;
9. Demonstrate empathy and humane approach towards patients and their families and exhibit interpersonal behavior in accordance with the societal norms and expectations;
10. Play the assigned role in the implementation of national health programs, effectively and responsibly;
11. Organize and supervise the chosen/assigned health care services Demonstrating adequate managerial skills in the clinic/hospital or the field situation;
12. Develop skills as a self-directed learner; recognize continuing educational needs, select and use appropriate learning resources;
13. Demonstrate competence in basic concepts of research methodology and epidemiology, and be able to critically analyze relevant published research literature;
14. Work towards realization of Health for all, as a national goal through Yoga and Naturopathy;
15. To follow the medical ethics and to fulfill the social and professional responsibilities as a Yoga and Naturopathy Physician through drugless therapies;

2.1. Institutional Goals

After the medical undergraduate program, the students must:

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. Be proficient in promotive, preventive, curative and rehabilitative medicine and therapy for common health issues;
3. Be adept in different therapeutic modalities and their administration;
4. Develop a humane attitude towards one's clients and understand economic, environmental, social, psychological and cultural factors that influence health;
5. Enjoy an urge for self-improvement, directed towards advanced expertise or research in any chosen area of health care;
6. Have enough knowledge about implementation of National Health Programs and the basic factors required for the same, which are as follows;
7. Family Welfare and Maternal and Child Health (MCH);
8. Sanitation and Water Supply;
9. Prevention and Control of communicable and non-communicable diseases;
10. Immunization;
11. Health education;
12. Possess management skills in human resources, materials and resource management in health care delivery;
13. 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;
14. Be able to work successfully in a variety of health care settings;
15. Develop integrity, responsibility, reliability, dependability and compassion, which are characteristics required for successful professional life;
16. Develop leadership and communication skills to work as leading investigator or clinician in health care team.

3.0. OBJECTIVES OF MEDICAL GRADUATE TRAINING PROGRAMME

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;
2. To provide state of the art learning facilities (e.g. audio visual aids, interactive learning systems) to conceptualize the ancient medical system;
3. To run advanced laboratories under each department (basic and clinical sciences)for effective experimental training and research;
4. To explore the possibilities of promoting effective integrated medical practice at conventional medical facilities attached to the institute;
5. To provide the best possible clinical setting for clinical training and research;
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;

4.0 NORMS RELATED BNYS COURSE

4.1 Admission Eligibility:

The candidate is eligible for admission to BNYS medical program if he/she has successfully complete 10+2 or equivalent with Physics, Chemistry and Biology group with a minimum of (?)% and as per the guidelines issues by the Government (state and central) bodies.

4.1. Course of Study

The duration of the BNYS program shall be 5 ½ years (Five and half years). The course shall include a period of regular study of four and a half (4½) years, followed by a compulsory rotatory internship for one year.

The period of regular study shall be divided into four phases – first year of one and half (1½) years, and the Second, Third and Final years of one-year each of the BNYS Medical Degree program respectively.

4.2. Attendance

A candidate shall be considered to have satisfied the requirement of attendance for each Part/Phase if he /she attends not less than 80 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 80 percent 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.

5.0 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:

5.1. I-Year B.N.Y.S. (18 months)

No. of Subjects	No. of Papers	SUBJECTS	TOTAL HOURS
I	02	Anatomy – I	500hrs
		Anatomy – II	
II	02	Physiology – I	500hrs
		Physiology – II	
III	01	Biochemistry	300hrs
IV	01	Philosophy of Nature cure	330hrs
V	01	Principles of *Yoga*	450hrs
VI	00	*Sanskrit* (Non Exam)	100hrs
		Total Hours	**2180hrs**

5.2. II-Year B.N.Y.S. (12 months)

No. of Subjects	No. of papers	SUBJECTS	TOTAL HOURS
I	02	Pathology I	450
		Pathology II	
II	01	Microbiology	250
III	01	Community Medicine	250
IV	01	*Yoga* Philosophy	350
V	01	Basic Pharmacology	100
VI	01	Colour Therapy and Magneto biology	150
VII	01	Forensic Medicine & Toxicology	100
		Total Hours	**1600**

5.3. I I I-Year B.N.Y.S. (12 months)

No. of Subjects	No. of Papers	SUBJECTS	TOTAL HOURS
I	01	Manipulative Therapies	200
II	01	Acupuncture & Acupressure	200
III	01	*Yoga*& Its Applications	250
IV	01	Nutrition & Medicinal herbs	250
V	02	Diagnostic Methods - I (Naturopathy)	400
		Diagnostic Methods -II (Conventional medicine)	
VI	01	Psychology & Basic Psychiatry	150
		Total Hours	**1450**

5.3. I V -Year B.N.Y.S. (12 months)

No. of Subjects	No. of Papers	SUBJECTS	TOTAL HOURS
I	01	Fasting Therapy & Dietetics	200
II	01	Obstetrics & Gynecology	150
III	01	*Yoga* Therapy	250
IV	01	Hydrotherapy & Mud Therapy	250
V	01	Physical Medicine & Rehabilitation	200
VI	01	First Aid & Emergency Medicine	100
VII	01	Clinical Naturopathy	200
VIII	01	Research Methodology & Recent Advances	100
		Total Hours	**1450**

INTERNSHIP PROGRAM:

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

Sl.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**

Internship Rules and Regulations

1. Interns will be under the administrative control of Director/Principal/Assistant Director (Clinical)of the School for the duration of Internship.
2. Internship is a specified training program and all interns need to follow all the discipline of the student.
3. Completion of Internship program shall be honored by depending on the conduct, behavior, regularity, punctuality and enthusiasm of Internee which observed during training period.
4. Student should clear all previous fees which may not clear unto completion of final year BNYS.
5. Student should pay Internship fee in advance, before beginning of Internship.
6. Rotatory Internship shall complete on the next day after completing 365 days.
7. During the program intern can avail a maximum 12 days of Casual Leave. Any short-fall will be compensated by extending completion date.
8. The applications for availing the casual leave shall be forwarded to the Assistant Director Clinical through the head of posting (CMO/MO/ Assistant Director Clinical as the case may be) and the sanction of leave shall be obtained from Assistant Director Clinical in advance.
9. Any intern absenting from duty without permission is liable for extension of that posting for a period equal to twice the number of days of such unauthorized absence.
10. Any intern, against whom the concerned head of place of posting (CMO/ MO) has submitted a report of 'Unsatisfactory work', is liable for repetition of an entire posting on that subject/department.
11. Strict disciplinary action shall be taken against any intern who is found missing or absent from duty during any surprise check conducted by the head of institute /Director/Principal/ Assistant Director Clinical.
12. There will not be any weekly off instead every Sunday half day off will be given. Half the number of internees can avail by morning duty time and rest can be by noon following discussion with Assistant Director Clinical/clinical coordinator.
13. Students should possess Provisional Registration Certificate from KAUP Board prior to begin of Internship program.
14. Intern should avail leave from Director/Principal/Assistant Director Clinical, once after made alternate arrangement to assigned work.
15. Leaves taking during outside duties should bring to notice of Director/Principal/Assistant Director Clinical through email by intern in prior.
16. Any grievance and issues should be brought to notice of Director/Principal/Assistant Director Clinical
17. Attending MORNING YOGA PRACTICE and MAITRIMILAN is mandatory to all interns during their postings at S-VYASA campus.
18. Intern should get signature for their daily work done report/ clinical diary from assigned work place by time to time, same should be undersigned by Director/Principal/Assistant Director of Clinical every alternate day.
19. Dissertation work is mandatory to get completion of the internship program. Intern should submit the work done 30 days prior to the Convocation Program.

7.0 SCHEME OF EXAMINATION

The examination/s shall be held as per the date of Examination notified by the controller of examination of the University. There should be one Internal & One External Examiner for all practical and 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 term/year.

Internal Assessment

1. There shall be an internal assessment which follows broadly the principles enunciated by the University in each subject for which 20 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 four periodical tests in every subjects of each year to assess the progress of the candidate.
2. 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 4 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 or lecturer with five years of teaching experience 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.

University Examinations – Subjects abd Distribution of Marks

I -YEAR BNYS (18 Months)

Sl.	Subject	Theory	Internal Assessment	Viva Voce	Total	Practical	Internal Assessment	Total	Grand Total Marks
01.	Anatomy - I	80	20	30	230	60	10	70	300
02.	Anatomy – II	80	20						
03.	Physiology - I	80	20	30	230	60	10	70	300
04.	Physiology– II	80	20						
05.	Biochemistry	80	20	30	130	60	10	70	200
06.	Philosophy of Naturopathy	80	20	30	130	60	10	70	200
07.	Principles of *Yoga*	80	20	30	130	60	10	70	200
08.	*Sanskrit*	80	20						100
								Total	1200

II -YEAR BNYS (12 Months)

Sl. No	Subject	Theory	Internal Assessment	Viva Voice	Total	Practical	Internal Assessment	Total Marks	Grand Total Marks
01.	Pathology-II	80	20	30	230	60	10	70	300
02	Pathology-II	80	20						
03.	Microbiology	80	20	30	130	60	10	70	200
04.	Community Medicine	80	20	30	130	60	10	70	200
05.	*Yoga* Philosophy	80	20	30	130	60	10	70	200
06.	Color Therapy and Magneto	80	20	30	130	60	10	70	200
07.	Basic Pharmacology	80	20	50	150	----------	--------	--------	150
08.	Forensic medicine and toxicology	80	20	50	150	----------	--------	--------	150
								Total	1300

III -YEAR BNYS (12 Months)

Sl.No	Subject	Theory	Internal Assessment	Viva-Voce	Total	Practical	Internal Assessment	Total Marks	Grand Total Mark
01.	Manipulative Therapies	80	20	30	130	60	10	70	200
02.	Acupuncture & Acupressure	80	20	30	130	60	10	70	200
03.	*Yoga* & its Applications	80	20	30	130	60	10	70	200
04.	Nutrition & Medicinal Herbs	80	20	30	150	60	10	70	200
05.	Naturopathy Diagnosis	80	20	30	130	60	10	70	200
06.	Modern Diagnosis	80	20	30	130	60	10	70	200
07.	Psychology & Basic Psychiatry	80	20	30	130	60	10	70	200
								Total	1400

IV -YEAR BNYS (12 Months)

Sl. No	Subject	Theory	Internal Assessment	Viva-Voce	Total	Practical	Internal Assessment	Total Marks	Grand Total Marks
01.	*Yoga* Therapy	80	20	30	130	60	10	70	200
02.	Fasting Therapy & Dietetics	80	20	30	130	60	10	70	200
03.	Hydrotherapy & Mud Therapy	80	20	30	130	60	10	70	200
04	Clinical Naturopathy	80	20	30	130	60	10	70	200
05.	Physical Medicine & Rehabilitation	80	20	30	130	60	10	70	200
06	Obstetrics & Gynecology	80	20	30	130	60	10	70	200
07.	First Aid & Emergency medicine	80	20	30	130	60	10	70	200
08.	Research Methodology & Recent Advances	80	20	30	130	60	10	70	200
								Total	1600

Note

All question papers shall have 2 Sections – namely Section A (10 Marks)

1. & Section –B (70 Marks).
    - Section A will contain 10 Multiple Choice Questions – 1 marks 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.
2. There should be one Internal & one External examiner for all, practical & viva exams for each subject.
3. All Theory Papers are for 3 hours duration.

7.1 Eligibility for examination:

Each student must have a certificate of satisfactory attendance, progress and conduct from the Director/Principal/Asst. Director Academics of the School, whichever applicable in the respective situation, to be eligible for admission to university examination.

A minimum of 80% attendance is required in theory and practical in each subject.

Eligibility criteria for carry over.

1. Candidates of 1st year BNYS are permitted to carry over 02 failed subjects to II year BNYS and appear for II BNYS Examination concurrently along with failed subjects of I BNYS. However, these candidates have to pass all failed subjects of I BNYS to become eligible to proceed to III BNYS.
2. Similarly, candidates of II BNYS Who have completely passed all the subjects of I BNYS but have failed in II BNYS are permitted to carryover 03 failed subjects of II BNYS to III BNYS and appearing for III BNYS Examination Concurrently along with failed II BNYS subjects. However, these candidates have to pass all failed subjects of II BNYS to become eligible to proceed to IV BNYS.
3. Candidate of III BNYS who have completely passed all the subjects of II BNYS but have failed in III BNYS are permitted to carry over 03 failed subjects of III BNYS to IV BNYS and appear for IV BNYS examination concurrently along with failed subjects of III BNYS.
4. The final BNYS candidates can appear for all the subjects of IV BNYS along with failed subjects of III BNYS. However, they have to pass all the subjects of III & IV BNYS for commencement of internship program.

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

7.2. Criteria for Pass

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

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.

7.3. Grading system

The students will be assigned a grade in each course based on his or her combined performance in the sessional work and the final examination. Grade distinction and grade point of each grade is as follows:

Grade Distinction			
Marks Obtained	**Grade**	**Grade Point**	**Class**
Less than 50 %	F	0	Fail
50 % to 54 %	C	1	Pass
55 % to 64 %	B	2	Second class
65 % to 74 %	A	3	First class
75 % to 100 %	E	4	Distinction

7.5. Cumulative Grade Point Average:

Based on the grades obtained in all the subjects registered for by a student, his or her Cumulative Grade Point Average (CGPA) is calculated as follows:

$$CGPA = \frac{\sum (\text{No. of Credits X Grade Point})}{\sum \text{No. of Credits}}$$

CGPA is rounded off to the second decimal place.

7.6. Award of prizes and medals

Sl. No.	Name of the Award	Particulars
1.	Vivekananda Best Student Award	Best Student among BNYS Graduates

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.

First year

Syllabus

(18 months)

Subject title: ANATOMY (Duration: 18 months)
Subject Codes:
Anatomy Theory Paper 1: BNYS101 T1
Anatomy Theory Paper 2: BNYS101 T2
Anatomy Practical: BNYS 101 P

Total Number of Hrs.: 500		Theory Paper 1: 150 Theory Paper 2: 150	Practical: 200	
SCHEME OF EXAMINATION				
Total Marks: 300				
Theory: 230			Practical: 70	
Final Theory Exam	Internal Assessment	Viva Voce	Final Practical Exam	Internal Assessment
Paper 1: 80 Paper 2: 80	40	30	60	10

Goal and Objectives
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.

Objectives
Knowledge:

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

- Understand normal human anatomy clinically important inter-relationship and functional anatomy of bodily structures.
- Comprehend histological structures of various tissues and organs and co-relate structure and function in order to understand diseased states;
- 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;
- Explain developmental basis of variations and abnormalities with respect to sequential development of organs and systems, teratogens, genetic mutations and environmental hazards.

Skills:

- After completion of the program, the student must be able to:
- Locate and identify body structures including topography of living body; Histologically, identify tissues and organs;
- Identify gross congenital anomalies and be familiar with the principles of karyotyping;
- Interpret new imaging techniques such as CT, Sonogram, MRI etc. after understanding their basic principles;
- Understand clinical basis of some common clinical procedures i.e., intramuscular and intravenous injection, lumbar puncture and kidney biopsy etc.

THEORY PAPER 1 (BNYS101 T1)

Unit – 1: Introduction to Anatomy **(15Hrs)**

i. Nomenclature
ii. Anatomical positions
iii. Axes and planes
iv. Tissues
v. Movements

Unit – 2: General Histology **(5Hrs)**

i. Detailed structure of cell and its components and their functional mechanisms

Unit – 3: Osteology (Including ossification) **(15Hrs)**

i. Types of bones
ii. Classification of bones
iii. Description of various bones of upper limb, thorax, abdomen and pelvis, vertebral column

Unit – 4: Classification of joints **(15Hrs)**

i. Construction of joints
ii. Description of various joints of upper limb, thorax and vertebral column

Unit– 5: Myology **(15Hrs)**

i. Types of muscles
ii. Muscles of upper limb, thorax, abdomen and pelvis
iii. Origin, insertion, blood supply, nerve supply, applied anatomy and actions of these muscles

Unit – 6: Respiratory System **(15Hrs)**

i. Upper respiratory tract–Nose, Pharynx, Larynx
ii. Trachea & Bronchial tree
iii. Lungs
iv. Pleura
v. Mediastinum

Unit – 7: Cardiovascular System **(15Hrs)**

i. Heart – Position, Surface anatomy and its description
ii. Great vessels–Aorta, Pulmonary trunk, superior vena cava, inferior vena cava and their branches
iii. Arteries and Veins–Structure of arteries and veins, important arteries and veins of the body

Unit – 8: Digestive System **(25Hrs)**

i. Oral cavity: Teeth, Hard and soft palates
ii. Esophagus & Stomach
iii. Liver, Gallbladder & Bile duct
iv. Small, large intestine & Anal canal
v. Pancreas, Spleen
vi. Peritoneum
vii. Mesentery and position of the above organs in the abdominal quadrants

Unit– 9: Urinary System **(15Hrs)**

i. Kidney
ii. Ureter
iii. Urinary bladder
iv. Male and female urethra

Unit– 10: Lymphatic System **(15Hrs)**

i. Lymph, lymph glands, lymph duct, thoracic duct, cisterna chyli
ii. Location of major groups of lymph nodes in the body and their drainage areas

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THEORY PAPER 2 (BNYS101 T2)

Unit– 1: Osteology (Including ossification) **(15Hrs)**

Description of various bones of

i. Lower limb
ii. Skull as a whole
iii. Individual cranial bones of skull

Unit– 2: Arthrology **(15Hrs)**

Description of various joints of

i. Lower limb
ii. Skull as a whole
iii. Skull and vertebral column

Unit– 3: Myology **(10Hrs)**

Description of various muscles of

i. Lower limb
ii. Head & Neck

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

Unit– 4: Male Reproductive System **(10Hrs)**

i. Penis
ii. Testes
iii. Vas Deferens
iv. Spermatic Cord
v. Epididymis
vi. Seminal Vesicles
vii. Ejaculatory Duct
viii. Prostate Gland

Unit– 5: Female reproductive system **(10Hrs)**

i. External genital organs: Vulva, Clitoris, Vagina, Inguinal Region Perineum
ii. Internal genital organs: Uterus, Cervix, Fallopian tubes, Ovaries
iii. Mammary glands
iv. Supporting structures of female genital organs

Unit– 6: Endocrine System **(15Hrs)**

Description of endocrine glands

i. Pituitary
ii. Pineal
iii. Thyroid
iv. Parathyroid
v. Thymus
vi. Spleen
vii. Pancreas
viii. Suprarenal glands
ix. Ovaries and Testes

Unit– 7: Nervous System **(15Hrs)**

i. Division of nervous system: Central nervous system, peripheral nervous system, cerebral hemispheres, midbrain, pons, medulla oblongata, cerebellum, spinal cord, autonomic nervous system.
ii. Meninges: Dura mater and arachnoid mater
iii. Cerebrospinal fluid (CSF) & Ventricular system
iv. Cranial and spinal nerves
v. Important plexuses: Cervical, Brachial, Lumbar, Sacral and their nerve descriptions.

Unit– 8: Organs of Special Senses **(15Hrs)**

i. Tongue
ii. Nose
iii. Eye and associated structures
iv. Ear
v. Integumentary system

Unit– 9: Surface Anatomy **(15Hrs)**

Projection of the outline of

i. Heart its borders, surface and valves.
ii. Lungs –borders, fissures, hila, pleura and diaphragm
iii. Liver
iv. Kidney
v. Abdominal viscera
vi. Pelvic viscera

PRACTICAL

Unit– 1: Gross Anatomy (Dissection / Demonstration of following)

i. Upper Limb **(25Hrs)**
a. Dissection: Pectoral, scapular, shoulder, arm, forearm
b. Projected Parts: Joints, Palm and dorsum of hand

ii. Thorax **(25Hrs)**
a. Dissection: Chest wall, mediastinum, lungs and heart

iii. Abdomen **(25Hrs)**
a. Dissection: anterior abdominal wall and inguinal region, viscera and posterior abdominal wall

iv. Pelvis **(25Hrs)**
a. Dissection: Pelvic viscera and blood vessels and nerve sagittal section (M &F)

Unit– 2: Lower Limb **(25Hrs)**

i. Dissection – Thigh, Gluteal region, Back of thigh, Knee joint, Leg, Ankle joint and foot.
ii. Prosecuted Parts: Sole of the foot and joints

Unit– 3: Head and Neck **(25Hrs)**

i. Dissection: Scalp, superficial and deep dissection of face and neck
ii. 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

Unit– 4: Nervous System **(25Hrs)**

i. 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)

Histology (General Histology) **(15Hrs)**

i. Microscope
ii. Cell
iii. Epithelial Tissue

Connective Tissue – Bones and Cartilages

i. Muscular Tissues
ii. Nerve Tissues (TS &LS of peripheral nerve, sensory and sympathetic ganglion, optic nerve)
iii. Epithelial glands (serous, mucous and mixed salivary gland)
iv. Circulatory system (large artery, medium sized artery, larger vein)
v. Lymphatic system (lymph nodes, thymus, tonsils, spleen)
vi. Skin and appendages
vii. Placenta and umbilical cord

Unit– 11: Systemic Histology (15Hrs)

i. Respiratory system (lungs, trachea)
ii. Esophagus and stomach
iii. Liver, gallbladder, pancreas
iv. Urinary system-I (Kidney)
v. Urinary system-II (Ureter, bladder)
vi. Small and large intestine
vii. Reproductive system– Female
viii. Reproductive system–Male
ix. Upper GIT (tongue)
x. Hypo-physis cerebri, thyroid and suprarenal glands
xi. Eye–cornea and retina

Recommended books:

1. Textbook of Anatomy(3 volumes)– BD Chaurasia
2. Human Anatomy for Students – B.D. Ghosh
3. Textbook of Anatomy–Hamilton
4. Practical Anatomy– Cunningham
5. Human Embryology–Inderbir Singh
6. Bailey‘s textbook of histology
7. Medical Embryology–Langman
8. Textbook of Clinical Anatomy by Neeta V Kulakarni
9. Histology text book by Latha V Prabhu
10. Text book of genetics – Dr. Gangane
11. Text book of embryology- Dr Krishna Garg
12. Dissection manual by Sujatha Kiran
13. Golden facts of Anatomy-Dr Vishram singh (Elsvier Publications)

Reference books:

1. Textbook of Anatomy–Gray
2. Atlas of histology– Diforie
3. Atlas of histology– Poddar
4. Textbook of human histology– Veena Bharihoke
5. A color atlas of human anatomy– Mcminn
6. Grant‘s method of Anatomy– Grant

Subject title: PHYSIOLOGY (Duration: 18 months)
Subject Code:
Physiology Theory Paper 1: BNYS102 T1
Physiology Theory Paper 2: BNYS102 T2
Physiology Practical: BNYS 102 P

Total Number of Hrs: 500		Theory Paper 1: 150 Theory Paper 2: 150	Practical: 200	
SCHEME OF EXAMINATION				
Total Marks: 300				
Theory: 230			Practical: 70	
Final Theory Exam	Internal Assessment	Viva Voce	Final Practical Exam	Internal Assessment
Paper 1: 80 Paper 2: 80	40	30	60	10

Goal and objectives
Goals:

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.

Objectives
Knowledge:
After the completion of the program, the students should be able to

- Explicate the normal functioning of all the organ systems and their interactions for well-coordinated body functions;
- Appreciate the relative contribution of each organ system to the homeostasis;
- Explain the physiological aspects of normal growth and development;
- Illustrate the physiological response and adaptations to environmental stresses;
- List physiological principles underlying pathogenesis and disease management.

Skills:
After the completion of the programs, the students should be able to:

- Conduct experiments designed to study physiological phenomena;
- Interpret experimental/investigative data;
- Differentiate between normal and abnormal data from results of tests, which he/she has done and observed in the laboratory.

THEORY PAPER-1 (BNYS102 T1)

Unit-1: General physiology **(10Hrs)**

i. Cell structure and functions
ii. Transport mechanism across biological membranes
iii. Body fluids and homeostasis

Unit-2: Blood **(50Hrs)**

i. Plasma proteins
a. Normal values
b. Origin, functions and variations in health and disease
c. Bone marrow-Composition and functions

ii. Erythrocytes
a. Morphology and variations in health and diseases
b. Erythropoiesis and factors regulating erythropoiesis
c. Life span and fats of erythrocytes
d. Erythrocyte sedimentation rate (ESR)
e. Packed cell volume (PCV)

iii. Hemoglobin and its types

iv. Anemia-definition and classifications

v. Jaundice-Definition and classifications

vi. Spleen-structure and function

vii. Leucocytes
a. Classification, morphology and functions
b. Variations in health and disease

viii. Thrombocytes
a. Development, morphology and functions
b. Variation in health and disease

ix. Hemostasis
a. Mechanism of hemostasis, coagulation of blood
b. Fibrinolysis and bleeding disorders

x. Anticoagulants
a. Mechanism of action and clinical applications

xi. Blood groups
a. ABO and RH system
b. Blood transfusion, indication and hazards

xii. Lymph and tissue fluids
a. Formation and functions of lymph
b. Physiology of reticular system

xiii. Immune system
a. Cellular and humoral immunity

Unit-3: Cardiovascular system **(22Hrs)**

Heart
a. Properties of cardiac muscles
b. Generation and spread of cardiac impulse

Electrocardiography
a. Einthovan's Law
b. ECG leads, normal ECG and its interpretation

Cardiac cycle
a. Pressure and volume changes (mechanical events)
b. Principles of echo-cardiograph

c. Jugular venous pulse tracing and radial pulse tracing
d. Measurement and regulation of Cardiac output

Heart sounds

a. Description, causation and relation to other events in cardiac cycle
b. Clinical significance of heart sounds

Blood pressure

a. Definition, regulation and factors influencing BP
b. Physiology of hemorrhage and circulatory shock

Circulations

a. Blood vessels
b. Physical principles of blood flow, regulation of blood flow
c. Coronary, Splanchnic, cutaneous and capillary, cerebral circulation
d. Cardiovascular changes in altitude and exercise

Unit-4: Respiratory system **(25Hrs)**

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

i. Mechanism of Respiration

a. Inspiration and expiration
b. Role of respiratory muscles and thoracic cage
c. Pressure and volume changes during respiration
d. Work of breathing
e. Lung compliance and its significance in health and disease

ii. Lung volumes and capacities

a. Lung volumes and capacities and their measurements

iii. Ventilation

Composition of atmospheric, inspired, alveolar and expired air

iv. Pulmonary circulation

a. Pulmonary circulation, ventilation-perfusion relationship
b. Diffusion of gases across pulmonary membrane
c. Oxygen uptake, transport and delivery
d. Carbon dioxide uptake, transport and delivery

Organization of respiratory centers

a. Nervous and chemical regulation of respiration
b. Classification and characteristic of hypoxia, cyanosis, asphyxia, hypercapnia, dyspnea, apnea and orthopnea and periodic breathing
c. Respiratory changes in high altitude
d. Physiology of acclimatization and hyperbarism
e. Respiratory/pulmonary function tests
f. Non-respiratory functions of lungs
g. Artificial respiration
h. Importance respiration
i. Importance of therapeutic administration of oxygen and carbon dioxide
j. Respiratory changes during exercise

Unit-5: Digestive system **(25Hrs)**

i. Introduction, functional anatomy of digestive system

ii. Salivary glands

a. Composition and functions of saliva
b. Regulation and secretion of saliva

iii. Stomach

a. Functional anatomy of stomach

b. Functions of stomach
c. Composition and functions of gastric juice
d. Regulation of secretion and mechanism of HCL secretion

iv. Pancreas

a. Functional anatomy of Pancreas
b. Composition and functions of Pancreatic juice
c. Regulation of Pancreatic secretion

v. Liver and Gall Bladder

a. Functional anatomy of liver and biliary system
b. Functions of liver and gall bladder
c. Formation, storage and secretion of bile
d. Composition, function and regulation of release of bile
e. Entero-hepatic circulation

vi. Small intestine

a. Functional anatomy and functions of small intestine
b. Composition, function and mechanism of secretions of Succus entericus

vii. Large intestine

a. Functional anatomy and functions of large intestine

viii. Gastro-intestinal hormones

a. Release and functions

ix. Gastro-intestinal movements

a. Mastication, deglutition and vomiting
b. Movements of stomach, filling and emptying of stomach
c. Movements of small intestine
d. Movements of large intestine and defecation
e. Regulation of movement

Unit-6: Excretory system (13Hrs)

i. General introduction, organs of excretion with special emphasis on evolution of excretory mechanisms
ii. Functional anatomy of renal glands and renal circulation
iii. Nephron
    a. Mechanism of urine formation
    b. Concentration and acidification of urine
iv. Non-excretory functions of Kidney
v. Physiology of micturition and its abnormalities
vi. Skin-structure and functions and temperature regulation

THEORY PAPER 2 (BNYS102 T2)

Unit-1: Endocrine system (27Hrs)

i. Introduction-evolutionary background and organization of endocrine control systems
ii. Hormones
iii. Classifications of hormones and mechanism of hormone action
iv. Regulation of hormone secretion and feedback system
v. Hypothalamo- hypophyseal system-hormones released
vi. Endocrine glands
vii. Pituitary glands-functional anatomy of anterior and posterior glands, chemical nature, actions, regulation and applied aspect of anterior and posterior pituitary hormones
viii. Thyroid gland-functional anatomy, hormones, applied aspect

ix. Adrenal gland-Functional anatomy of adrenal cortex and medulla, hormones and applied physiology of adrenal cortex and medulla
x. Islet of Langerhans-Functional anatomy, hormones, applied aspect
xi. Other hormones-prostaglandins, thromboxane, acetylcholine, serotonin, histamine, bradykinin, leptin, prostacyclin, leukotrienes, atrial natriuretic peptide, brain natriuretic peptide, melatonin

Unit-2: Reproductive system **(16Hrs)**

i. Physiology of reproduction
   a. Introduction to physiology of reproduction
ii. Male reproductive system
   a. Development and structure of testes
   b. Functions of testes
   c. Gonadotropins and gonadal hormones
   d. Composition of Semen and structure of human sperm
iii. Female reproductive system
   a. Functional anatomy of female reproductive system
   b. Functional anatomy and functions of ovary
   c. Gonadotropins and ovarian hormones
   d. Physiology of menstrual cycle
   e. Physiology of ovulation and pregnancy
   f. Physiology of placental, gestation and parturition
   g. Physiological basis of tests for ovulation and pregnancy
   h. Physiology of lactation

Unit-3: Nerve and muscle physiology **(4Hrs)**

i. Neuron
ii. Morphology of neuron and Classification of neuron and nerve fibers
iii. Properties of nerve fibers and measure of excitability
iv. Degeneration and regeneration of nerve fibers
v. Muscle: Classification of muscles
vi. Skeletal muscle-structure, properties and functions
vii. Excitation-contraction coupling
viii. Neuromuscular junction
ix. Smooth muscle-structure, types, properties and functions
x. Cardiac muscle- structure, properties, functions
xi. Myasthenia gravis
xii. Starling's law and its applications

Unit-4: Central Nervous system **(65Hrs)**

i. Structural and functional organization of central nervous system
ii. Neuroglia cells
iii. Sensory physiology
   a. Classification and general properties of receptors
iv. Synapse
   a. Types of synapse and their structure
   b. Functions and properties of synapse
   c. Classification and actions of neuro-transmitters
v. Reflexes
   a. Classification of Reflexes
   b. General properties of Reflexes with examples
   c. Reciprocal inhibition and reciprocal innervation

vi. Spinal cord
   a. Functional anatomy of spinal cord
   b. Ascending tracts-situation, origin, course, termination and functions
   c. Physiology of pain, different pathways of pain sensation
   d. Physiology of referred pain
   e. Gate control theory, analgesia system
   f. Descending tracts-situation, origin, course, termination and functions
   g. Extrapyramidal tracts-situation, origin, course, termination and functions
   h. Upper and lower motor neurons and their lesions
   i. Brown Sequard syndrome, Syringomyelias
vii. Functional anatomy and functions of Brain stem
viii. Thalamus
   a. Functional anatomy, connections and functions
   b. Effect of lesions
ix. Internal capsule-situation, divisions, effect of lesions
x. Hypothalamus
   a. Functional anatomy, connections and functions
   b. Effect of lesions
xi. Cerebellum
   a. Functional anatomy, connections and functions
   b. Effect of lesions and tests for cerebellar functions
xii. Basal ganglia
   a. Functional anatomy, connections and functions
   b. Diseases of basal ganglia and its clinical evaluation
xiii. Cerebral cortex
   a. Functional anatomy of cerebral cortex
   b. Functional areas and its functions of frontal lobe, parietal lobe, temporal lobe and occipital lobe
xiv. Limbic system
   a. Functional anatomy, connection and functions
xv. Reticular formation
   a. Functional anatomy, connections and functions of reticular formation
   b. EEG, physiology of sleep and wakefulness
xvi. Vestibular apparatus
   a. Functional anatomy, connections and functions
   b. Effect of lesions and their assessment
   c. Physiology of maintenance and regulation of muscle tone, posture and equilibrium
   d. De cerebrated rigidity and righting reflexes
xvii. Higher functions
   a. Learning, speech, memory, behavior and emotions
xviii. Cerebro-spinal fluids
   a. Formation, circulation, functions of CSF
   b. Properties and composition of CSF
   c. Methods of collection of CSF and its clinical significance
   d. Blood-brain barrier
xix. Autonomic Nervous system
   a. Sympathetic nervous system and its functions
   b. Parasympathetic nervous system and its functions
   c. Autonomic function tests

Unit-5: Special senses **(40Hrs)**

i. Smell
   a. Structure of olfactory receptors

b. Physiology of olfaction and olfactory discrimination
c. Olfactory pathway and defects of olfaction

ii. Taste
a. Structure of taste receptor, primary taste sensation and taste pathway and applied aspects

iii. Vision
a. Functional anatomy of eye
b. Structure of visual receptors
c. Neural, chemical, electrical basis of visual process
d. Visual acuity, field of vision, tests for visual acuity and field of vision
e. Visual pathways and effects of lesions in visual pathways
f. Pupillary reflexes
g. Colour vision, colour blindness and tests for colour blindness
h. Error of refraction and its correction
i. Physiology of aqueous humour
j. Dark and light adaptation
k. Lacrimal glands, formation and circulation of tears

iv. Hearing
a. Functional anatomy and functions of external, middle and internal ear
b. Impedance matching and tympanic reflex
c. Auditory pathways and auditory cortex
d. Mechanism of hearing
e. Theories of hearing
f. Defects of hearing
g. Audiometry, other tests for hearing defects, SOTE, Horizontal integration and Tests

PRACTICAL

I. **Blood** **(40Hrs)**

i. Preparation and examination of peripheral blood smear and determination of differential leucocyte count
ii. Determination of total red blood cell count
iii. Determination of total leucocyte count
iv. Determination of erythrocyte sedimentation rate, packed cell volume
v. Determination of Haemoglobin concentration of blood
vi. Determination of ABO and Rh blood groups
vii. Determination of bleeding time and clotting time

II. **Cardiovascular system** **(30Hrs)**

i. Determination of Pulse
ii. Determination of the effect of posture and exercise on blood pressure
iii. Clinical examination of the human cardiovascular system (CVS)

III. Respiration **(30Hrs)**

i. PEFR
ii. Spirometry (demonstration)
iii. Examination of human respiratory system

Recommended books:

1. Medical physiology-A. K. Jain
2. Medical physiology – Mahapatra
3. Concise text book of Medical physiology-S. K. Choudhary

Reference books:

1. Textbook of Medical physiology- AC Guyton and Hall
2. Best and Taylor's physiological basis of medical practice
3. Medical physiology- Ganong
4. Practical physiology-C. L. Ghai
5. Practical physiology – Pravathi Pal

PRACTICAL

i. Neuromuscular physiology **(25Hrs)**
   a. Handgrip dynamometer
   b. Ergograph- work done
ii. Neurophysiology **(30Hrs)**
   a. Examination of motor and sensory system
   b. Examination of cranial nerves
iii. Special senses **(30Hrs)**
   a. Determination of visual acuity
   b. Clinical assessment of colour vision (Demonstration)
iv. Perimetry: mapping of visual field
v. SOPE and tests

Recommended books:

1. Medical physiology-A. K. Jain
2. Medical physiology – Mahapatra
3. Concise text book of Medical physiology-S. K. Choudhary

Reference books:

1. Textbook of Medical physiology- AC Guyton and Hall
2. Best and Taylor's physiological basis of medical practice
3. Medical physiology- Ganong
4. Practical physiology-C. L. Ghai
5. Practical physiology – Pravathi Pal

Subject Name: BIOCHEMISTRY (Duration: 18 months)
Subject Code:
Biochemistry Theory Paper: BNYS103 T
Biochemistry Practical: BNYS103 P

Total Number of Hrs: 300			Theory: 200		Practical: 100
		SCHEME OF EXAMINATION			
Total Marks: 200					
Theory: 130				Practical: 70	
Final Theory Exam	Internal Assessment		Viva Voce	Final Practical Exam	Internal Assessment
80	20		30	60	10

Goal and objectives
Goals:

The goals of introducing 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.

Objectives
Knowledge:

At the end of the course, the student should be able to demonstrate his knowledge and understanding on the:

- Molecular and functional organization of a cell, and sub- cellular components;
- Structure, function and interrelationship of biomolecules and consequences of deviation from normal;
- Basic and clinical aspects of enzymology and regulation of enzymatic activity;
- Digestion and assimilation of nutrients and consequences of malnutrition;
- Integration of the various aspects of metabolism, and their regulatory pathways;
- Biochemical basis of inherited disorders and their associated sequelae;
- Mechanisms involved in maintenance of body fluid and pH homeostasis;
- Molecular mechanisms of gene expression and regulation, the principles of genetic engineering and their application in medicine;
- Molecular concepts of body defense and their application in medicine;
- Biochemical basis of environmental health hazards; and biochemical basis of cancer and carcinogenesis, principles of metabolism, and detoxication of xenobiotics.
- Principles of various conventional and specialized laboratory investigations and instrumentation, analysis and interpretation of a given data; the ability to suggest experiments to support theoretical concepts and clinical diagnosis.

Skills:

At the end of the course, the student should be able to

- Make use of conventional techniques/ instruments to perform biochemical analysis relevant to clinical screening and diagnosis
- Analyze and interpret investigative data
- Demonstrate the skills of solving clinical problems and decision making.

THEORY PAPER (BNYS103 T)

Unit-1: Cell and subcellular structures **(8Hrs)**

i. Cell structure
ii. Transport across cell membrane
iii. Subcellular organelles
iv. Cell membrane

Unit-2: Biomolecules **(25Hrs)**

i. **Amino acids**-Classification of amino acids, Properties of amino acid, General reaction of amino acids, Peptide bond formation.
ii. **Proteins**-Structure of proteins, Study of protein structure, Physical properties of proteins, colour reactions of proteins, Classification of protein, Collagen, Elastin, Muscle protein, Lens protein
iii. **Carbohydrates**-Nomenclature, Stereoisomers, Reaction of monosaccharides, Disaccharides, Polysaccharides, Heteroglycans, Mucopolysaccharides, Glycoprotein and muco proteins
iv. **Lipids**: Definition, classification and biological importance of lipids
   a. Simple lipid – Composition of triglyceride and Wax
   b. Compound lipid – Composition and function of Phospholipid, glycolipids & lipoprotein
   c. Derived lipids-Classification &properties fatty acids ,Steroids &sterols
   d. Micelle, Liposomes

Unit-3: Enzymes **(10Hrs)**

Definition, classification of

i. Kinetics, mechanism of enzymatic catalysis
ii. Factors influencing enzymatic activity
iii. Enzyme activators and inhibitors
iv. Mechanism of enzyme activity
v. Clinical enzymology & Isoenzymes

Unit-4: Vitamins **(10Hrs)**

i. Definition and classification of vitamins
ii. Brief account of sources, chemistry, RDA, biochemical functions, deficiency diseases of Vitamins and Hyper vitaminosis of each vitamin.

Unit-5: Minerals **(10Hrs)**

i. Classification of minerals
ii. Brief account of sources, chemistry, RDA, biochemical functions, deficiency diseases of minerals (Calcium, Phosphorus, Iron, Copper, Zinc, Magnesium, Lead, Mercury, Arsenic, Fluoride, Sodium, Potassium and Chloride)

Unit-6: Digestion and absorption **(10Hrs)**

i. Digestion and absorption of carbohydrates, lipids and protein

Unit-7: Metabolic pathway of glucose **(15Hrs)**

i. Glycolysis
ii. Pyruvate oxidation
iii. Glycogenolysis
iv. Gluconeogenesis
v. Glycogenesis
vi. TCA cycle and biological oxidation
vii. HMP shunt
viii. Galactose and fructose metabolism
ix. Inborn errors of glucose metabolism
x. Regulation of carbohydrate metabolism & hormone

Unit-8: Amino acid metabolism **(12Hrs)**

i. Reactions involved in formation &detoxification of ammonia
ii. Urea cycle
iii. Function of Glycine, Alanine, Serine, Metheonine, Tryptophan, Phenylalanine, cysteine, Glutamic acid, Aspartic acid, Glutamine, proline

iv. Derivative of amino acid & their function
v. Inborn error of amino acid metabolism

Unit-9: Lipid metabolism (12Hrs)

i. Biosynthesis and degradation of fatty acid, phospholipids and triglycerides
ii. Biosynthesis and degradation of cholesterol, Chemistry and metabolism of lipoprotein
iii. Hyperlipoproteinemia
iv. Lipid storage disease
v. Ketone bodies-Synthesis, utilization and conditions leading to ketoacidosis
vi. Fatty liver and lipotropic factors
vii. Formation and function of Prostaglandin and Leukotrienes
viii. Hyperlipidemias and cardiovascular disease

Unit-11: Regulation of the metabolic pathways (8Hrs)

i. Integration of metabolic pathway
ii. Organ interrelationships in metabolism
iii. Blood glucose regulation and its impairment in diabetes mellitus
iv. Metabolic adaptation of fed state, fasting and prolonged starvation
v. Metabolic derangement and adaptation in diabetes mellitus

Unit-12: Biochemistry of blood & Acid-base Balance (14Hrs)

i. Synthesis and degradation of Heme
ii. Structure and function of hemoglobin
iii. Abnormal hemoglobin & hemoglobinopathies
iv. Jaundice
v. Functions and separation of plasma protein
vi. Blood pH and its regulation
vii. Respiratory regulation of pH
viii. Renal regulation of pH
ix. Acidosis and alkalosis

Unit-13: Energy metabolism (10Hrs)

i. Calorific Value of foods
ii. Definition of BMR and factors influencing it
iii. Energy requirements for physical activity
iv. Nutritional importance of Lipids, proteins and carbohydrates
v. Balanced diet
vi. Protein energy malnutrition
vii.Obesity

Unit-14: Renal function and Liver function test (4Hrs)

Unit-15: General techniques for separation, purification and quantitation (8Hrs)

i. Electrophoresis, Chromatography, RIA, ELISA, Colorimeter

Unit-16: Molecular biology (18Hrs)

i. Chemistry of Nucleic acids -Definition, classification, composition of nucleic acid: structure and function of DNA: Types, structure & function of RNA.
ii. Biosynthesis and breakdown of purines, synthesis and breakdown of pyrimidine
iii. DNA replication
iv. Transcription
v. Post transcription processing
vi. Translation and genetic code
vii. DNA repair mechanism
viii. Control of gene expression-Mutation, cell cycle, regulation of gene expression
ix. Recombinant DNA technology, vectors, Gene therapy and stem cell

x. Molecular diagnostics and genetic techniques-Hybridization and blot techniques, PCR

Unit-17:Hormone **(10Hrs)**

i. Mechanism of hormone action
ii. Function of pituitary, thyroid, parathyroid, adrenal, pancreas and gonads
iii. Steroid hormones &their relation to metabolism

Unit-18: Biochemistry of cancer and environmental biochemistry **(8Hrs)**

i. Oncogenes &Tumor markers
ii. Environmental pollutants
iii. Xenobiotic, interaction with biomolecule, effect & metabolism

PRACTICAL

Unit-1: Qualitative Experiments **(25Hrs)**

i. Reaction of monosaccharides-glucose and fructose
ii. Reaction of disaccharides-lactose, maltose and sucrose
iii. Reaction of polysaccharides-starch
iv. Colour reactions protein-Albumin, Casein and gelatin
v. Precipitation &coagulation of proteins
vi. Normal constituent of urine
vii. Analysis of abnormal urine

Unit-2: Quantitative Experiments **(40Hrs)**

i. Determination of blood sugar
ii. Determination of blood urea
iii. Determination of total serum protein
iv. Determination of total serum calcium
v. Determination of SGOT and SGPT
vi. Determination of total serum bilirubin
vii. Determination of total serum triglyceride
vii. Determination of total serum cholesterol
ix. Determination of Alkaline phosphatase

Unit-3: Demonstration **(15Hrs)**

i. Colorimetry and colorimeter
ii. Paper chromatography
iii. GTT
iv. Electrophoresis

Unit-4: Case-oriented discussions (enzymes, metabolites and function tests) **(20Hrs)**

Recommended books for theory:

1. Text book of Biochemistry for medical students-By DM Vasudevan, Sreekumari S, Kannan Vaidyanathan
2. Text book of Biochemistry –By Dr. U. Satyanarayana, Dr. U Chakrapani
3. Biochemistry for medical students-By Debjyoti Das
4. Text book of Biochemistry –By Sucheta Dandekar
5. Text book of Biochemistry-By Rama Rao
6. Text book of Biochemistry –By Ramakrishna, Prasanna and Rajan
7. Biochemistry-By Nelson & Cox

Reference books:

1. Harper's illustrated Biochemistry
2. Lehniger, Principle of biochemistry

3. Biochemistr, Berg and Stryker
4. Lippincott's Biochemistry

Recommended books for practicals

1. Comprehensive practical and viva in biochemistry-By Arabind S Yadav,Sharsa R Deshmukh,Pramod S, Kamble
2. Pactical of biochemistry –By Dr. G.Rajagopal,B.D. Toora
3. Practical text book of biochemistry for MBBS students-DM Vasudevan, Subir Kumar Das
4. Practical Biochemistry -- Varley

Reference books

1. Laboratory manual of biochemistry –By Patabhirama and Acharya
2. Laboratory manual in biochemistry –By Rajgopal and Ramakrishana

Subject title: PHILOSOPHY OF NATUROPATHY (Duration: 18 months)
Subject Code:
Philosophy Of Naturopathy Theory Paper: BNYS104 T
Philosophy Of Naturopathy Practical: BNYS 104 P

Total Number of Hrs: 330		Theory: 210		Practical: 120
SCHEME OF EXAMINATION				
Total Marks: 200				
Theory: 130			Practical: 70	
Final Theory Exam	Internal Assessment	Viva Voce	Final Practical Exam	Internal Assessment
80	20	30	60	10

Goals and objectives
Goals:

The goals of introducing the philosophy of Naturopathy to the undergraduate students is to make them understand the 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.

Objectives
Knowledge:

- After completion of the course, the student shall be able to:
- Elucidate the history of Naturopathy including major contributors to the field and their work;
- Understand the evolution and composition of the human body according to different schools of medicine such as Naturopathy, *Yoga, Ayurveda*, Homeopathy, Modern Medicine, etc.
- Firmly establish his/her diagnostic and therapeutic thought processes in the fundamental principles of Naturopathy:
- Laws of nature according to Henry Lindlar
- Concepts of health and disease according to Naturopathy
- Ten basic principles of Naturopathy
- Concept of *Panchamahabhuthas* and Naturopathy, *Panchatantras, Shareera Dharmas*
- Foreign matter, toxin accumulation, theory of Toxemia, Unity of disease and Unity of Cure, Concept of vitality
- Holistic approach and Modern perspectives of Naturopathy
- Natural rejuvenation
- 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
- Understand Principles behind using the diagnostic procedures of Naturopathy, like spinal diagnosis, facial diagnosis, iris diagnosis, and chromo diagnosis.
- Demonstrate knowledge of recent advances and research in Naturopathy principles/theories.

Skills:

- At the end of the course, the student will be able to:
- Demonstrate basic knowledge of the various therapeutic modalities utilized in Naturopathy;
- Describe the various principles of Naturopathy with respect to the body, health, disease and therapy.

THEORY (BNYS104 T)

Unit -1: The Medical Profession and evolution – an introduction (15Hrs)

i. Concept of Health and Disease through the ages
   a. Philosophy and Science of Health, Disease and Medicine
ii. Understanding the Human body
   a. Evolution of Human body
   b. Philosophy of body, mind, spirit and spiritual body with reference to various cultures, philosophies, Vedas and Modern view
   c. Composition of Human body according to Ayurveda, Naturopathy, Yoga, Modern Medicine, Homeopathy
iii. An introduction to Nature Cure or Naturopathy – Definition, concepts and theories of various pioneers in the field.
iv. Naturopathy – a blend of Drugless therapies
v. Holistic Approach of Naturopathy

Unit- 2: History of Naturopathy and Philosophy of Naturopathy (25Hrs)

i. Chronological highlights of Naturopathy
ii. Philosophy of Indian Naturopaths
   a. Mahatma Gandhi
   b. Vinoba Bhave
   c. Vegiraju Krishnamraju
   d. Dr. S J Singh
   e. Dr J M Jussawala
   f. Lakshman Sharma
iii. Philosophy of Western Naturopaths
   a. Hippocrates
   b. The School of Salerno
   c. Paracelsus
   d. Vincent Priessnitz
   e. Sebastian Kneipp
   f. Arnold Rickli
   g. Louis Kuhne
   h. Adolf Just
   i. John H Tildon
   j. Sigmund Freud
   k. Henry Lindlar
   l. John Wesley
   m. Herbert M Shelton
   n. Ignatz Von Peczley
   o. D D Palmer
   p. Andrew Taylor Still
   q. Bernard Mcfadden
   r. Aesculepius

Unit- 3: Fundamental Principles, Concepts and theories of Naturopathy (70Hrs)

i. Laws of Nature according to Henry Lindlahr
ii. Catechism of Nature Cure according to Henry Lindlahr
iii. Concepts of Health according to Naturopathy
iv. Concepts of Disease according to Naturopathy
v. The 10 basic principles of Naturopathy
vi. 6 fundamental Principles of Natural Medicine in the West
vii. Concept of *Panchamahabhoota* and Naturopathy
viii. Foreign Matter and toxin accumulation in the body and its importance in elimination through different ways and channels
ix. Unity of Disease, Unity of Cure and way of treatment
x. Theory of toxemia – toxins and anti-toxins, their generation and mitigation in Nature Cure way
xi. Concept of Vitality and Vital Economy
xii. How Nature Cures – the natural healing mechanisms
xiii. *Arogya Rakshak Panchatantra* and their importance in maintenance of health, prevention and treatment of disease through lifestyle modifications
xiv. *Shareera Dharma – Ahara, Nidra, Bhaya, Maithuna*

xv. Natural ImmUnity and how to acquire Natural ImmUnity in diseases
xvi. Inflammation – Naturopathic perspectives
xvii. Vaccination and inoculation – the Naturopathic view
xviii. Family planning through Natural therapeutics

Unit- 4: Modern perspectives of Naturopathic Medicine **(20Hrs)**

i. Understanding homeostasis
ii. Metabolism of xenobiotics
iii. Ageing, free radicals and antioxidants
iv. Hygiene – importance of Physical and Mental Hygiene in health and disease

Unit- 5: Introduction to Diagnostic Procedures in Naturopathy **(5Hrs)**

i. Spinal Analysis
ii. Facial Diagnosis
iii. Iris Diagnosis
iv. Chromo diagnosis
v. Pulse Diagnosis
vi. Tongue Diagnosis

Unit-6: Applications of Naturopathy **(20Hrs)**

i. Basic essentials of a Naturopathy practitioner – an introduction to qualities of a Naturopathy and Yoga practitioner, Doctor's etiquettes, approach to the patient with a Naturopathic view, Ethical considerations, understanding the scope and limitations
ii. Natural Rejuvenation
iii. Personal life and prevention of disease
iv. Geriatrics and Naturopathy
v. Naturopathy in Rehabilitation

Unit-7: Introduction to other systems of Medicine **(20Hrs)**

i. Modern Medicine
ii. Ayurveda
   a. Introduction
   b. Definition of Prakriti and its categories
   c. SwasthaVrittam
   d. Dinacharya
   e. Ratricharya
   f. Ritucharya
   g. Vegadharanam
iii. Homeopathy v. Siddha
iv. Unani
v. Comparative study of Naturopathy with other systems of medicine

Unit-8: Recent advances in Naturopathy and Yoga **(30Hrs)**

i. An introduction to Stress and its influence on human systems
ii. Concept of psychosomatic diseases
iii. Psychoneuroimmunology and psychoneuroendocrinology
iv. Introduction to Mind-Body Medicine
v. Lifestyle and psychosocial Medicine
vi. Global perspectives: An introduction of Complementary and Alternative Medicine (CAM)
vii. Introduction to Integrative Medicine
viii. An introduction to Research and its importance in Naturopathy

PRACTICAL

Unit-1: Introduction to various treatment procedures used in Naturopathy, its basic classification and procedures through observation and demonstration **(20Hrs)**

i. Regular habits like

a. Sun Bath
b. Bare foot walking on grass
c. Exercises
d. Rest and relaxation
e. Fasting Therapy

Unit-2: Hydrotherapy (40Hrs)

i. Baths
a. Hip bath
b. Spinal Bath
c. Steam Bath
d. Foot bath
e. Full Immersion bath

ii. Packs
a. Chest pack
b. Abdominal pack
c. Gastro-hepatic pack
d. Kidney pack
e. Full wet sheet pack

iii. Internal application of water
a. Enema
b. Colon Hydrotherapy
c. Water drinking

Unit-3: Mud Therapy and Balneotherapy (5Hrs)

Unit- 4: Manipulative Therapies (10Hrs)

i. Massage Therapy
ii. Chiropractic
iii. Osteopathy
iv. Aromatherapy

Unit-5: Naturopathic Nutrition, dietetics with special emphasis on Natural Diet (10Hrs)

Unit-6: Acupuncture, Acupressure and Reflexology (10Hrs)

Unit-7: An introduction to Physiotherapy (10Hrs)

i. Exercise therapy
ii. Electrotherapy

Unit-8: Modern Naturopathic Methods (10Hrs)

i. Biofeedback
ii. Jacuzzi

Recommended books:

1. Philosophy of Nature Cure – Henry Lindlahr
2. Practice of Nature Cure - Henry Lindlahr
3. Practical Nature Cure – K Laxman Sharma
4. My Nature Cure – MK Gandhi
5. History and Philosophy of Nature Cure – SJ Singh
6. Natural Health Care – A to Z – Belinda Gran
7. Complete Handbook of Nature Cure – HK Bakhru
8. Introduction to Natural Hygiene – Herbert Shelton
9. Toxemia – JH Tilden

10. Return to Nature – Adolf Just
11. Textbook of Natural Medicine – Joseph E. Pizzorno and Michel T. Murray

Reference books:

1. Human Culture and Cure – ED Babbit
2. Natural Healthcare – Belinda Gran
3. The New Science of Healing – Louis Kuhne
4. The science of Facial expression – Louis Kuhne
5. The story of my experiments with truth – M K Gandhi
6. Key to health – M K Gandhi
7. Prayer – M K Gandhi
8. Diet and Diet reforms – M K Gandhi
9. Panchatantra – B Venkat Rao
10. Everybody's guide to Nature Cure – Henry Benjamin
11. Encyclopedia of health and physical culture – BernarrMacfadden
12. Thirukular–Valluvar
13. Ayurveda for health and long life – R K Garade
14. Fundamentals of Ayurveda – KN Udupa
15. Siddha Medicine – Ram Murthy
16. Homoeopathic Philosophy – Kent

Subject name: PRINCIPLES OF YOGA
Subject code:
Principles of Yoga Theory Paper: BNYS105 T
Principles of Yoga Practical: BNYS105 P

Total number of Hrs: 450		Theory:250		Practical: 200
SCHEME OF EXAMINATION				
Total marks-200				
Theory: 130			Practical:70	
Final theory exam	Internal assessment	Viva	Final practical exam	Internal assessment
80	20	30	60	10

Goal and Objectives
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*.

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

- Explain the various definitions of *Yoga*, history of *Yoga* and branches of *Yoga*
- Describe kinds of *Yogasanas*, its importance, methods, rules, regulations and limitations;
- Illustrate the various limbs of *Ashtanga Yoga*;
- Demonstrate knowledge of *pranayamas*, *prana* and lifestyle, breathing and lifespan.

Skills:

- After the completion of the course, the student shall be able to:
- Demonstrate various types of *Yogasanas* in their correct method of performance;
- Demonstrate different *pranayamas*.
- Explain about the definitions, origin, branches of *Yoga*.

THEORY

Unit-1: Introduction to Yoga **(10 Hrs)**

i. Meaning of Yoga
ii. Definition of Yoga according to *Bhagavadgita, Yoga Vasishta, PYS and Upanishads*
iii. What is not Yoga – Practices that are usually mistaken to be Yoga

Unit-2: Historical development of Yoga **(20 Hrs)**

i. Yoga during the era of Ramayana and Mahabharata
ii. Pioneers of Yoga, their life history and Contributions
    a. Shri Ramakrishna Paramahamsa
    b. Sharada Devi
    c. Swami Vivekananda
    d. Ramana Maharshi
    e. BKS Iyengar

Unit-3: Streams of Yoga **(20 Hrs)**

i. 4 Streams of Yoga acc. to Vivekananda (Raja, Karma, Jnana & Bhakti)
ii. Swara Yoga
iii. Laya Yoga
iv. Tantra Yoga
v. Mantra Yoga
vi. Kundalini Yoga
vii. Hatha Yoga

Unit-4: Contemporary Schools of Yoga **(20 Hrs)**

i. Vipassana Meditation
ii. Transcendental meditation – Mahesh Yogi
iii. Raja Yoga Meditation – Brahma Kumaris
iv. Osho
v. Isha
vi. S-VYASA
vii. Patanjali Yoga Peeth
viii. Art of Living

Unit-5: Introduction to Yoga Texts and important concepts: **(30 Hrs)**

i. Vedas
ii. Narada Bhakti Sutras
iii. 10 major Upanishads
iv. BhagavadGita and concept of Yoga
v. Yoga Vasishta

Unit-6: Yogic Understanding of Human Body **(20 Hrs)**

i. Nadis
ii. Chakras and their correlation with glands and plexus
iii. Granthis and their importance
iv. Panchakosa- Annamaya, Pranamaya, Manomaya, Vijnanamaya and Anandamaya and their components
v. Pancha Pranas and Upapranas

Unit-7: Introduction to Yoga Practices **(20 Hrs)**

i. Difference between Asana and Exercises
ii. Asana for Beginners, Intermediate & Advanced practitioners
iii. Precaution and philosophical benefits of Asanas
iv. Principles behind the practices of Mudras
v. Basic Hasta Mudras

Unit-8: Hatha Yoga - Philosophy and Practices **(30 Hrs)**

i. Hatha Yoga - Meaning, Definition, Aims, Objectives and Misconceptions
ii. Introduction to various Hatha Yoga Texts
iii. Concept of Mathika, Rules and regulations to be followed by a Hatha Yogi
iv. Obstacles and Success
v. Yama and Niyama
iv. Concept of Mitahara, Pathya and Apathya

Unit-9: Shodhana Kriyas and Asana as per Hatha Yoga **(40 Hrs)**

i. Shodhanakriyas (21) in Gheranda Samhita, their benefits and precautions
ii. Role of Shodhana-kriyas in Yoga sadhana and their importance
iii. Yogasana, its definition, salient features and benefits
iv. Asanas (32) in Gheranda Samhita, their techniques, benefits, precautions and importance

Unit-10: Lesson Planning and Teaching Methods in Yoga **(10 Hrs)**

i. Model Lesson and Session Planning for any Yoga Session
ii. Benefits and Limitations of Planning Methodology
iii. Eight step teaching method

PRACTICAL

1. Sukshma Vyayama (20Hrs)
2. Stretches (20Hrs)
3. Breathing Exercises (20Hrs)
4. Suryanamaskara (20Hrs)

5. **Asanas** **(70Hrs)**
   - **i. Standing**
     a. Tadasana
     b. Ardha Kati Chakrasana
     c. Kati Chakrasana
     d. Trikonasana
     e. Vrikshasana
     f. UtthitaTrikonasana
     g. Veerabhadrasana
     h. Parsvottanasana
     i. Parighasana
     j. Garudasana

ii. Supine

a. Shavasana
b. Matsyasana
c. Sarvangasana
d. Halasana
e. Naukasana
f. Chakrasana
g. Pawanmuktasana
h. Sethubandhasana
i. Vipareetakarani
j. Karnapeedasana
j. Suptakonasana

iii. Prone

a. Makarasana
b. Bhujangasana
c. Ardha shalabhasana
d. Shalabhasana
e. Dhanurasana
f. Adhomukha Svanasana
g. Navasana

iv. Sitting

a. Vakrasana
b. Ardhamatsyendrasana
c. Paschimottanasana
d. Usthrasana
e. Vajrasana
f. Padmasana
g. Baddha Padmasana
h. SuptaVajrasana
i. Ardha Navasana
j. Gomukhasana
k. Veerasana
l. Baddha Konasana
m. Janusirshasana
n. Upavistha Konasana
o. Shashankasana

2. **Pranayama** **(20Hrs)**

a. Bhastrika
b. Sheetkari
c. Sheetali
d. Sadanta
e. AnulomaViloma
f. Ujjayi
g. Bhramari

3. **Kriya** **(30Hrs)**
    a. Kapalabhati
    b. Jala Neti
    c. Sutra Neti
    d. Vamana Dhauti

Recommended books:

1. Basis and definitions of Yoga – Vivekananda Kendra
2. Asanas, Pranayama, Bandhas, Mudras – Swami SatyanandaSaraswathi
3. Hatha Yoga Pradipika – Swami Svatmarama
4. Gheranda Samhitha – Swami Niranjananda Saraswati
5. Asanas – Swami Kuvalyananda
6. The Gospel of Buddha – Parul Caruso
7. The Gospel of Shri Ramakrishna – Mahendranatha Gupta
8. Complete works of Shri Aurobindo
9. Raja, Hatha, Jnana, Bhakti Yoga – Swami Vivekananda
10. Ashtanga Yoga - Kaivalyadham
11. Yoga Instructor's Course: Self-Learning Material by S-VYASA, Bangalore

Second year Syllabus (12 months)

Subject title: PATHOLOGY
Subject Codes:
Pathology Theory Paper 1: BNYS 201 T1
Pathology Theory Paper 2: BNYS 201 T2
Pathology Practical: BNYS 201 P

Total Number of Hours: 300		Theory Paper 1: 100 Theory Paper 2: 100	Practical: 100	
SCHEME OF EXAMINATION				
Total Marks: 300				
Theory: 230			Practical: 70	
Final Theory Exam	Internal Assessme	Viva Voce	Final Practical Exam	Internal Assessment
Paper 1: 80 Paper 2: 80	40	30	60	10

GOALS AND OBJECTIVES

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.

Objectives

Knowledge:

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

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

Skills:

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

- Elaborate on principles, procedures and interpretation of results of diagnostic laboratory tests;
- Perform with proper procedure simple bed side tests on biological fluid samples like blood, urine etc.
- Prepare investigation flow-charts for diagnosing and managing common diseases;
- Identify biochemical and physiological disturbances in diseases;

THEORY PAPER 1 (BNYS 201 T1)

Unit-1: **Introduction to Pathology** **(15Hrs)**

i. History and Scope
ii. Definition and various branches
iii. Scientific study of disease and methodology
iv. The cell and their action of cell, tissue and organ to injury
   a. Structure and functions of cell, Causes and nature of cell injury
   b. Toxic substances, physical agents and lack of nutrients
   c. Infectious agents and parasites
   d. Immune mechanisms and genetic defects
   e. Reaction of cell to injurious agents
      a) Lethal injury– necrosis and gangrene

b) Sub lethal injury
c) Cloudy swelling
d) Fatty changes in liver, heart and kidney
e) Glycogen infiltration and hyaline degeneration
f) Lipid degeneration Gaucher‘s disease
g) Mucoid degeneration
h) Excessive or abnormal accumulations
i) Amyloid
j) Pathological calcification

Unit- 2: Inflammation and Repair **(15Hrs)**

Definition, classification and nomenclature

i. Acute inflammation
   a. Vascular and cellular phenomenon, cells of exudates chemical mediators and tissue changes in acute inflammation, cardinal signs of acute inflammation
   b. Fate, types and systemic effects of acute inflammation
ii. Chronic Inflammation
iii. Difference between acute and chronic inflammation
iv. Definition of Granuloma
v. Wound healing
   a. Restitution, regeneration and repair
   b. Fracture healing
   c. Repair of epithelial and mesenchymal tissue
   d. Primary union and secondary union
   e. Mechanism involved and factors modifying repair process

Unit-3: Granulomas **(12Hrs)**

i. Classification
ii. Tuberculosis, genesis and fate of tubercle, primary and secondary tuberculosis
iii. Definition, classification and pathology of leprosy
iv. Acquired primary, secondary and tertiary stages syphilis
v. a.CNS syphilis, CVS syphilis and tertiary stages syphilis
vi. Actinomycosis, maduramycosis, rhinosporidiosis

Unit -4: Fluid and Hemodynamic Changes (circulatory disturbances) **(13Hrs)**

i. Hyperemia, congestion and hemorrhage
ii. Thrombosis, embolism,
iii. DIC, Ischemia, infarction, shock

Unit -5: Immunopathology **(10Hrs)**

i. Basic pathological mechanism in autoimmune disorders
ii. Hypersensitivity reactions and its types
iii. Concept of immune deficiency disorders, SCIDs,
iv. Pathology of AIDS

Unit-6: Growth disorders and definitions **(15Hrs)**

i. Introduction to growth disorders
ii. Definition of agenesis , aplasia, atrophy, hyperplasia, hypertrophy, hypoplasia, metaplasia
iii. Concept of dysplasia, anaplasia and carcinoma in-situ
iv. Neoplasia
   a. Definition, classification and nomenclature

b. Characteristic features of benign and malignant tumor
c. Route of spread of malignant tumors
d. Grading and staging of cancers and pre-cancerous conditions
e. Carcinogenesis and carcinogens
   a) Viral carcinogenesis
   b) Chemical carcinogenesis

v. Effect of tumor on host, and effect of host on tumors
vi. Immune sueveillance
vii. Laboratory diagnosis of cancer –
   a. Biopsy,
   b. Exfoliative cytology,
   c. prognostic prediction in cancer
   d. FNAC
   e. Tumour markers
viii. Description of common tumors like – Fibroma, Lymphoma, Lipoma, Angioma, Liomyoma, Fibro sarcoma, Lympho sarcoma, Lipo sarcoma, Angio sarcoma, and Leiomyo sarcoma
ix. Embryonal tumors like teratoma and retinoblastoma

Unit -7: Mineral and Pigment Metabolism (10Hrs)

i. Pathology of melanin pigment
ii. Pathology of hemoglobin and its derivatives, porphyrias
iii. Hemosiderosis and hemochromatosis

Unit- 8: Genetic disorders (10Hrs)

i. Klinefelter‘s Syndrome,
ii. Turner‘s Syndrome,
iii. Down‘s Syndrome, Mendelian disorders: auotsomal dominant and recessive
iv. Genetic Diagnostic Techniques: Karyotyping, FISH

Theory Paper 2 (BNYS 201 T2)

Unit-1: Haematological Disorder (15Hrs)

i. Disorders of RBC
   a. Definition, morphologic and etio-pathologic classification of anemia
   b. Iron deficiencyanemia,B12 and folate deficiency anemia, sidero blastic anemia, post-hemorrhagic anemia
   c. Concept and classification of hemolytic anemia
   d. Thalassemia, sickle cell anemia, anemia of chronic diseases
   e. Acquired hemolytic anemia and aplastic anemia
   f. Polycythemia
   g. Laboratory investigations in anemia
ii. Disorders of WBC
   a. Leukopenia, Leukocytosis
   b. Leukemias: ALL, CLL, AML, CML
   c. Agranulocytosis and Tropical eosinophilia
iii. Coagulation and bleeding disorders
   a. Structure, function and pathology of platelets
   b. Definition and classification of blood dyscrasias
   c. Haemophilias
   d. Laboratory investigations in bleeding disorders: PT, BT, PTT

Unit- 2: Diseases of cardiovascular system (14Hrs)

i. Arteriosclerosis and atherosclerosis
ii. Aneurysm
iii. Vasculitis and thrombo angitiso bliterans
iv. Rheumatic heart disease, endocarditis,
v. Hypertension: primary, secondary
vi. Angina: Stable, Unstable, Prinz metals
vii. Myocardial infarction: morphological changes, enzymatic changes, markers
viii. Congenital heart diseases, pericarditis
ix. Congestive cardiac failure

Unit- 3: Diseases of Respiratory system (10Hrs)

i. Lobar pneumonia, broncho pneumonia, pulmonary tuberculosis
ii. Atelectasis, bronchiectasis and pneumoconiosis
iii. Chronic Obstructive Pulmonary Diseases (COPD)
    a. Emphysema
    b. Chronic bronchitis
    c. Bronchiectasis
iv. Bronchial asthma
v. Acute respiratory distress syndrome(ARDS)
vi. Tumors of lung and pleura: mesothelioma, small cell carcinoma, adenocarcinoma

Unit 4: Diseases of gastrointestinal system (10Hrs)

i. Pleomorphic adenoma of salivary gland
ii. Barrett‘s esophagus
iii. Gastritis and peptic ulcer disease, duodenal ulcers, H. Pylorii infection
iv. Tumors of stomach
v. Inflammatory bowel diseases– Crohn‘s disease, ulcerative colitis, typhoid
    a. Ulcer, tumors of small intestine
    b. Mega colon
    c. Mickel’s diverticulum, volvulus, intuss ception
    d. Tumors of colon: benign (polyps) and malignant
    e. Malabsorption syndrome, tropical sprue and celiactuberculosis
    f. Acute appendicitis

Unit-5: Diseases of liver, biliary tract and pancreas (10Hrs)

i. Liver function test
ii. Alcoholic hepatitis
iii. Cirrhosis of liver, portal hypertension, hepatic failure
iv. viral hepatitis: HAV, HCV, HBV
v. Tumors of liver: HCC
vi. Cholecystitis, gall stones
vii. Acute and chronic pancreatitis, diabetes mellitus
viii. Liver abscess

Unit-6: Diseases of Kidney ` (4Hrs)

i. Renal function tests, polycystic kidney
ii. Acute renal failure
iii. Acute glomerulonephritis (post-streptococcal), crescentric glomerulonephritis, membranous

glomerulonephritis, nephritic syndrome, nephrotic syndrome

iv. Chronic glomerulonephritis, acute tubular necrosis
v. Pyelonephritis,
vi. Kidney in hypertension, chronic renal failure
vii. Urolithiasis,
viii. Tumors of kidney and pelvis

Unit-7: Diseases of Male Genital System **(5Hrs)**

i. Orchitis and testicular tumors
ii. Nodular hyperplasia of prostate, carcinoma of prostate
iii. Carcinoma of penis and pre-malignant lesions of penis

Unit- 8: Diseases of Female Genital System **(4Hrs)**

i. Endometrial hyperplasia, adenomyosis and endometriosis
ii. Carcinoma of cervix, tumors of ovary
Risk factors, tumour markers
iii. Pelvic inflammatory diseases
iv. Carcinoma and other diseases uterus: leiomyoma

Unit-9: Diseases of Breast **(4Hrs)**

i. Fibrocystic disease of the breast, fibro adenoma
ii. Carcinoma breast
iii. Gynecomastia, Paget's disease

Unit- 10: Endocrine pathology **(4Hrs)**

i. Pituitary adenomas, acromegaly,
ii. Hypothyroidism and Grave's disease
iii. Thyroiditis, tumors of thyroid and thyroid function tests
iv. Hypo parathyroidism and hyperparathyroidism
v. Hyper plasia and adenoma of parathyroid
vi. Adrenal gland, Addison's disease, Cushing's syndrome
vii. Pheochromo cytoma, neuro blastoma

Unit-11: Musculoskeletal pathology **(5Hrs)**

i. Osteomyelitis and osteoporosis
ii. Rickets and osteomalacia
iii. Osteitis fibrosacystic and Paget's disease, fibrous dysplasia
iv. Duschenne muscular dystrophy
v. Tumors of bone
a. Osteoma
b. Osteosarcoma
c. Ewing's Sarcoma
d. Chondrosarcoma

Unit-12: Autoimmune Disorders **(3Hrs)**

i. Introduction to autoimmunity: basic mechanisms
ii. Rheumatoid arthritis, Gout
iii. Myastheniagravis
iv. Systemic lupus erythymatosus

Unit-13: Diseases of Nervous System **(5Hrs)**

i. Meningitis,
ii. Tumors of CNS
    a. Menigioma
    b. Astrocytoma
iii. Tumors of peripheral nerves
    a. Neuro fibroma
    b. Schwannoma
iv. Encephalitis
v. Degenerative Diseases
    a. Parkinson's disease
    b. Alzheimers's disease
    c. Multiple sclerosis
    d. Motor neuron disease
    e. Prion disease
    f. Vit B12 deficiency: sub-acute combined degeneration of spinal cord

Unit-14: Diseases of Lymph nodes and Spleen **(4Hrs)**

i. Lymphadenopathy, reactive lymphadenitis
    a. Bacterial (tubercular)
    b. Viral
ii. Lymphomas
    a. Hodgkins
    b. Non-hodgkins
iii. Spleeno megaly

Unit-15: Pathology of skin **(3Hrs)**

i. Squamous cell carcinoma, basal cell carcinoma
ii. Malignant melanoma
iii. Warts, molluscum contagiosum
iv. Superficial and deep fungal diseases
v. Pemphigus vulgaris

PRACTICAL

Unit- 1: Hematology **(25Hrs)**

i. Blood groups (ABO system)
ii. Estimation of hemoglobin
iii. Enumeration of RBCs (RBC count)
iv. Total leucocyte count (Total count)
v. Differential leucocyte count (DC)
vi. Peripheral smear staining and reporting
vii. Absolute eosinophil count

Unit-2: Clinical Charts for diagnosis **(25Hrs)**

i. Hemogramsin anemia
ii. Iron deficiency anemia
iii. Macrocytic anemia
iv. Microcytic anemia
v. Hemolytic anemia
vi. Meningitis

vii. Enzyme levels in MI
viii. Hemogramsin leukemias
ix. Acute types
x. Chronic types

Unit- 3: Slide study of **(30Hrs)**

i. Acute myeloid leukemia
ii. Chronic myeloid leukemia
iii. Chronic lymphatic leukemia
iv. Anemia: macrocytic , microcytic
v. Plasmodium falciparum malaria
vi. Lipoma
vii. Acute appendicitis
viii. Gastric carcinoma
ix. Carcinoma breast
x. Emphysema
xi. Cirrhosis of liver
xii. Osteogenic sarcoma
xiii. Myocardial infarction
xiv. Pulmonary tuberculosis

Unit 4: Specimen of **(10Hrs)**

i. Gastric carcinoma
ii. Carcinoma breast
iii. Bronchogenic carcinoma
iv. Cirrhosis of liver
v. Leiomyoma
vi. Cardiac hypertrophy
vii. Osteogenic sarcoma
viii. Astroctoma
ix. Appendicitis

Unit 5: Clinical pathology **(10Hrs)**

i. Urine analysis
ii. Semen analysis
iii. CSF analysis

Recommended books

1. Pathological basis of disease– Robbins, Cotran and Kumar
2. Textbook of Pathology–Harsh Mohan
3. Practical Manual by Harsh Mohan

Reference books

1. Textbook of Pathology–Anderson
2. Systemic Pathology– Symmers
3. Medical Laboratory Technology– Ramnik Sood

Subject title: MICROBIOLOGY
Microbiology Theory: BNYS 203 T
Microbiology Practical: BNYS 203 P

Total Number of Hours: 250		Theory: 150		Practical: 100
SCHEME OF EXAMINATION				
Total Marks: 200				
Theory: 130			Practical: 70	
Final Theory Exam	Internal Assessment	Viva Voce	Final Practical Exam	Internal Assessment
80	20	30	60	10

Goal and objectives

Goals:

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 disease in the community.

Objectives:

After the completion of the student shall be able to:

- Remember and recall all the infectious micro-organisms of the human body and host-parasite relationship.
- Describe parasitic micro-organisms (viruses, fungi, bacteria, parasites) with the pathogenesis of the diseases they cause.
- Enumerate and illustrate sources and modes of transmission, including insect vectors, of pathogenic and opportunistic organisms;
- Describe the pathways and mechanism of immunity to infection.
- Acquire knowledge about different vaccines that are available for the prevention of communicable diseases;
- Effectively use sterilization and disinfection to control and prevent nasocomical and community acquired infection;
- Order laboratory investigations for bacteriological examination of food, water and air.

Skills:

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

- Prescribe and interpret laboratory investigations for diagnosis of communicable diseases and identify infectious agents by clinical manifestations;
- Perform common bed-side tests to detect and identify pathogenic agents, such as blood film for malaria, filarial, gram stain and stool sample for ova cyst, etc.

THEORY PAPER ((BNYS 203 T)

Unit-1: Immunology **(25Hrs)**

i. Immunity
ii. Structure and Function of Immune System
iii. Antigen
iv. Antibodies-Immunoglobulins

v. Antigen and Antibody reactions
vi. Complement System
vii. Immune response
viii. Hypersensitivity
ix. Auto immunity
x. Transplantation Immunity &Tumor Immunity

Unit-2: General Bacteriology **(22Hrs)**

i. Introduction & History
ii. Morphology &Physiology of bacteria
iii. Sterilization &disinfection
iv. Culture media
v. Culture method (aerobic &anaerobic)
vi. Identification of bacteria
vii. Classification of bacteria
viii. Bacterial antibiotics and sensitivity test
ix. Bacterial genetics
x. Mechanism of bacterial drug resistance
xi. Infection and mechanism of bacterial pathogenesis

Unit-3: Systemic Bacteriology **(27Hrs)**

i. Staphylococcus
ii. Streptococcus
iii. Pneumococcus
iv. Meningococcus & Gonococcus
v. Corynebacterium
vi. Clostridium
vii. Haemophilus
viii. Mycobacterium
ix. Spirochaetes
x. Bordetella
xi. Chlamydia
xii. Enterobactericeae
xiii. Vibrio
xiv. Pseudomonas

Unit-4: Virology **(22Hrs)**

i. General properties of Viruses (Structure, replication, cultivation, anti-viral drugs, vaccines)
ii. Virus-host interactions
iii. Virus infection
iv. Herpes Virus
v. Adeno virus
vi. Polio virus
vii. Influenza virus
viii. Measles, Mumps & Rubella Virus
ix. Hepatitis virus
x. Rhabdo virus
xi. HIV

Unit-5: Parasitology (26Hrs)

i. Introduction & Classification
ii. Entamoeba histolytica
iii. Plasmodium
iv. Leishmania
v. Trypanosoma
vi. Balantidium coli
vii. Giardia lamblia
viii. Taenia(saginata,solium)
ix. Echinococcusgranulosus
x. Schistosomahaematobium
xi. Fasciola hepatica
xii. Trichinella(spiralis,trituria)
xiii. Strongiloidesstercoralis
xiv. Ancylostomadeodenale
xv. Ascarislumbricoides
xvi. Wuchereriabancrofti
xvii. Brugiamalayi
xviii. Loa loa
xix. Dracunculusmedinensis

Unit-6: Mycology (18Hrs)

i. General characteristics & Classification
ii. Superficial Mycoses- (Trichophyton, Microsporidium, Epidermiphyton, Candida, Pityriosisversi color,Teneanigra, Piedrahartae)
iii. Subcutaneous Mycoses (Rhinosporidium, Spirothrix, Mycetoma)
iv. Systemic Mycoses (Cryptococcus, Histoplasma, Blastomyces, Coccidioidomyces)
v. Opportunistic Mycoses (Aspergillus,Mucor,Rhizopus,Fusarium,Penicillium,Cladosporium)

Unit-7: Applied Microbiology (10Hrs)

i. Normal flora
ii. Bacteriology of water
iii. Immuno Prophylaxis
iv. Infections-Meningitis, Gastroenteritis, Respiratory Infection, UTI, PUO, Endocarditis.

PRACTICAL

Unit-1: Microscopes &its use (5Hrs)

i. Magnification
ii. Resolution
iii. Different types of microscopes

Unit-2: Staining techniques (14Hrs)

i. Simple staining, Differential staining (Gram's method, Ziehl Neelsen's method), Negative staining, Special staining &Impregnation method

Unit-3: Tools of Microbiology (10Hrs)

i. Incubators, Centrifuges,Hot-Air –Oven, Autoclave, Inspissator, Inoculation loop,Pasteur pipettes, Depression slide, Anarobicjar, Filters, Tuberculin syringe, Surgical gloves, VDRL slides, Microtitreplate, Sterileswab, WIDAL rack

Unit-4: Sterilization and disinfection (10Hrs)

Unit-5: Culture media (15Hrs)

i. Classification of Media
ii. Preparation of media-Liquid, Solid, enrichedmedia, selectivemedia, Indicator media

Unit-6: Culture method (8Hrs)

i. Principals of isolation &identification
ii. Inoculation
iii. Identification of bacteria

Unit-7: Methods of antimicrobial sensitivity test (5Hrs)

i. Disk diffusion
ii. Tube dilution

Unit-8: Serological tests (4Hrs)

i. VDRL
ii. WIDAL
iii. ELISA

Unit-9: Mycology (10Hrs)

i. Demonstration of fungus by KOH/lactophenol cotton blue staining
ii. Demonstration of yeast cells in Gram stains &Culture
iii. Aspergillus, mucor & penicillium cultures

Unit-10: Parasitology (15Hrs)

i. Examination of stool for ova, parasites & cyst
ii. Blood parasites –Malaria parasite, L.D. body, Microfilaria
iii. Adult parasites-Nematodes, Cestodes, Trematodes

Recommended books

1. Text book of Microbiology –R Ananthanarayana and CK Jayakumar
2. Text book of Microbiology – C P Baveja
3. Parasitology-JayaramPanicker
4. Bacteriology –Dey
5. Text book of Microbiology –Chakraborthy
6. Text book of practical Microbiology –Subhash Chandra Parija

Reference books

1. Parasitology –Chaterjee
2. Practical microbiology-R Cruick Shank
3. Clinical microbiology –Bailey &Scott
4. Immunology and Microbiology-Gupta

Subject Name: COMMUNITY MEDICINE
Subject Code: BNYS T 204 & BNYS P 204

Total Number of Hours: 250		Theory: 150		Practical: 100
SCHEME OF EXAMINATION				
Total Marks: 200				
Theory: 130			Practical: 70	
Final Theory Exam	Internal Assessment	Viva Voce	Final Practical Exam	Internal Assessment
80	20	30	60	10

Goals and objectives

Goals:

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.

Objectives

Knowledge:

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

- Describe the health care delivery system including rehabilitation of the disabled in the country.
- Describe the National Health Programmes with particular emphasis on maternal and child health programmes, family welfare planning and population control.
- List epidemiological methods and describe their applications to communicable and non-communicable diseases in the community or hospital situation.
- Apply bio-statistical methods and techniques; delineate the demographic pattern of the country and appreciate the roles of the individual family, community and socio-cultural environment in health and disease.
- Explain the health information systems; 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‘.
- Able to plan a Health Program and able to evaluate a Programme.
- Able to describe principles of organization.

Skills:

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

- Use epidemiology as a scientific tool for making national decisions relevant to community and individual patient intervention.
- Collect, Analyses, interpret and present simple community and hospital based data.
- Diagnose and manage common health issues and emergencies at the individual family and community levels with existing healthcare resources, respecting socio-cultural beliefs.
- Diagnose and manage maternal and child health problems and conduct family planning counseling and community programs keeping in mind national priorities
- Diagnose and manage common nutritional problem at individual and community level.
- Design, implement and evaluate health education program using simple audio-visual aids
- Participate with team members in organizing and implementing health care programs;Conduct group meetings, give talks on medical issues.

THEORY PAPER – (BNYS-204 T)

Unit- 1: Concepts of Health & Concept of Disease (15Hrs)

i. Man and Medicine: Towards Health for All
ii. Concept of Health
iii. Definitions of Health
iv. Dimensions of Health
v. Determinants of Health
vi. Positive health
vii. Concept of wellbeing
viii. Responsibility towards health
ix. Health development and its indicators
x. Health science philosophies
xi. Concepts of causation
xii. Natural history of disease
xiii. Concepts of control and prevention
xiv. Modes of intervention
xv. Population medicine
xvi. International classification of diseases

Unit- 2: Epidemiology and Epidemiologic Methods (22Hrs)

i. Definition, basic measurements in epidemiology
ii. Epidemiological methods – descriptive, analytical and experimental epidemiology
iii. Uses of epidemiology
iv. Dynamics of disease transmission
v. Disease prevention and control
vi. Investigation of an Epidemic
vii. Screening of diseases: Concepts, Uses, Criteria for screening, sensitivity & specificity

Unit- 3: Epidemiology of Communicable & Non-Communicable Diseases (25Hrs)

i. Respiratory infections – small pox, varicella, measles, rubella, mumps, influenza, diphtheria, pertussis, tuberculosis, acute respiratory tract infection (ARTI), COVID - 19
ii. Intestinal infections – polio, viral hepatitis, cholera, acute diarrheal diseases, typhoid, food poisoning, amoebiasis, ascariasis, ancylostomiasis, taeniasis.
iii. Arthropod – borne infections – yellow fever, Japanese encephalitis, malaria, filarial
iv. Surface infections – rabies, trachoma, tetanus, leprosy, STD, AIDS
v. Epidemiology of non-communicable diseases – cancer, cardiovascular diseases obesity, blindness, accidents, hypertension, stroke, rheumatic heart disease

Unit- 4: Family Health (20Hrs)

i. Family Planning – Demographic cycle, population trends, fertility related statistics, health aspects of family planning, contraceptive methods and delivery system, National family welfare program.
ii. Preventive medicine in Obstetrics, Pediatrics and Geriatrics – Antenatal, Intranatal, 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.

Unit- 5: Environmental Issue (20Hrs)

i. 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, hospital waste management
ii. 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

Unit- 6: Statistics & Health Education (17Hrs)

i. Basic Medical Statistics: Census, Vital events, , SRS, , measures of dispersion and centering, sampling, tests of significance, correlation and regression
ii. Health education and communication: Objectives, principles, aids, practice of Health education, planning and evaluation

Unit- 7: Healthcare of Community (15Hrs)

i. 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
ii. 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
iii. International health agencies: WHO, UNICEF, RED CROSS
iv. Voluntary health agencies.

Unit -8: Nutrition and Health (16Hrs)

i. 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,
ii. Assessment of nutritional status, nutritional surveillance, social aspects of nutritional food hygiene, food-borne disease, Legislation

PRACTICAL

Unit- 1: Field Visit_ (25Hrs)

i. Posting at any PHC, CHC, RHC or district hospital for National Immunization Program
ii. Nutritional Assessment Surveys
iii. 1 day workshop or awareness program on AIDS with NACO
iv. Posting at Blood donation camp
v. Anganwadi, PHC / CHC / RHC / District hospital and understanding description of existing healthcare services

Unit- 2: Study on Health Related Problem in the Community (25Hrs)

i. Family Health Advisory Service
ii. To study the family structure & health status of individual members with reference to
    a. General health status
    b. Socio-economic status
    c. Nutritional status

d. Environmental
e. Immunization status
f. Family welfare planning status

iii. Health Practices in 4 conditions
a. Pulmonary Tuberculosis
b. Index case: occupation, literacy, social status etc.

iv. Preventive measures for other family members
a. Health education
b. Antenatal Care
c. Literacy of the family and woman
d. Customs – social / religious during pregnancy, delivery, lactation
e. Dietary habits: knowledge, aptitude and practices
f. Antenatal high risk care
g. Health education, family planning advice
h. Protein energy malnutrition
i. Socio-economic status of family
j. Infant feeding and weaning practices

v. Social customs regarding diet for children

Unit -3: Models **(25Hrs)**

i.	Insecticides	10+ models
ii.	Universal Immunization Program	10+ models
iii.	Communicable diseases	10+ models
iv.	Insect-borne diseases	10+ models
v.	Microscope slides	10+ models
vi.	Environment and Sanitation	10+ models

Unit 4: Bio- Statistical charts **(25Hrs)**

i. Bar charts
ii. Histogram
iii. Line diagram
iv. Pie charts
v. Pictogram

Recommended books:

1. Textbook of Preventive and Social Medicine – JE Park & K Park
2. Textbook of Preventive and Social Medicine – BK Mahajan& MC Gupta

Reference books:

1. Preventive medicine – Ghosh
2. Preventive medicine – Yeshpal

Reference papers:

1. WHO Program papers
2. National Health Program Papers
3. Voluntary health Program Papers
4. Red Cross Program papers
5. UNICEF Program Papers

Subject name: YOGA PHILOSOPHY
Subject code: BNYS-205 T, BNYS-205 P

Total number of hours: 350		Theory:150	Practical: 200	
SCHEME OF EXAMINATION				
Total marks-200				
Theory: 130			Practical:70	
Final theory exam	Internal assessment	Viva	Final practical exam	Internal assessment
80	20	30	60	10

Goals and Objectives

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.

Objectives

Knowledge:

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

- Explain the basic understanding of Yoga as a philosophy
- Describe the various schools of philosophy which had an influence on Yogic text like buddhism, samkhya, mimamsa etc.
- Comprehend the concept of brahman according to vedanta

Skills:

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

- Perform and demonstrate various asanas, pranayamas, kriyas and meditations;
- Describe various philosophies of Yoga and apply them therapeutically, relating to a patient ‘s life situation or personality.

THEORY PAPER – BNYS 205 T

Unit-1: Nyaya and Vaishesika **(15Hrs)**

i. Introduction to Six Orthodox Systems of Indian Philosophy
ii. Nature of physical world
iii. Individual soul, liberation and concept of supreme soul in Indian philosophy
iv. Theory of body, mind and soul and philosophical background
v. Category of substance-Nava Dravyas
vi. Category of quality-24 Gunas

Unit-2: Sankhya and Yoga **(15 Hrs)**

i. Theory of cause and effect; Prakriti and Purusha
ii. Process of evolution of universe and concept of liberation
iii. Practical teachings of Sankhya
iv. Concept of Atman, Brahma, Maya, Universe, God; the self and human life
vi. Liberation and means of attaining it
vii. Similarity in Yoga and Sankhya concepts

Unit-3: Mimamasa and Vedanta (15 Hrs)

i. Major teachings of Mimamsa system; selfless action, nonattachment, self-control, self-discipline,
ii. Daily schedule for psychophysical wellbeing, social awareness, sense of equality, unity with diversity, selectiveness.
iii. Major teachings of Upanishads
iv. Advaita, Dvaita and Vishishtaadvaita Philosophy, contribution by pioneers of every teaching

Unit-4: Heterodox Systems of Indian Philosophy (10 Hrs)

i. Introduction to Heterodox Systems of Philosophy
ii. Important concepts from Buddhism; Four Main schools of Buddhism
iii. Important concepts from Jainism; Lineage of Theerthankara
iv. Important concepts from Carvaka

Unit-5: Pranayama Mudra and Bandha in Hatha Yoga (20 Hrs)

v. Mudras (25), method of practice, benefits & role of mudras in Yoga Sadhana
vi. Ashtakumbhakas (10), technique, benefit & role of bandhatrayas in Sadhana

Unit-6: Dharana, Dhyana and Samadhi in Hatha Yoga (20Hrs)

i. Pancha Dharana
ii. Methods of Dhyana in GS
iii. Concept of Samadhi in HYP - Samadhi Siddhi Lakshanam,
    a. Nadanusandhana: The concept of Nada, Four avasthas
    b. Concept of Bindu, its evolution and techniques to preserve it
iv. Six Types of Samadhi in GS

Unit-7: Patanjali Yoga Sutras: Samadhi Pada (20Hrs)

i. Definition & Purpose of Yoga
ii. Concept of Chitta and Chitta bhumis
iii. Chitta-Vrtti Nirodha Upaya (Abhyasa and Vairagya)
iv. Samprajnata & Asamprajnata Samadhi
v. Means of Attaining Asamprajnata Samadhi
vi. Concept of Ishwara & Pranava Sadhana
vii. Obstacles & Hindrances to progress – Chitta Vikshepa / Antarayas
viii. Means to overcome Obstacles - Chitta-Prasadanam
ix. Concept of Sabeeja & Nirbeeja Samadhi

Unit-8: Patanjali Yoga Sutras: Sadhana Pada (20Hrs)

i. Kriya Yoga (Tapas, Svadhyaya, IsvaraPranidhana)
ii. Pancha kleshas (Avidya, Asmita, Raga, Dvesa, Abhinivesah)
iii. Methods of destroying Kleshas
iv. Purpose of destroying Kleshas
v. Bahiranga Yoga: Yama, Niyama, Asana, Pranayama & Pratyahara

Unit-9: Patanjali Yoga Sutras: Vibhuti & Kaivalya Pada (20Hrs)

i. Antaranga Yoga: Dharana, Dhyana & Samadhi
ii. Concept of Samyama
iii. Parinama – the 3 transformations of Consciousness
iv. Attainment of Ashta Siddhis
v. Psychic Powers

vi. Means of attaining Psychic Powers
vii. Karma: Individual and the cosmic mind
viii. Dharma-megha Samadhi
ix. Path to Kaivalya

Unit-10: Concept of Ghata and Svara Yoga in the context of Shiva Svarodaya (10Hrs)

i. Concept of Ghata and its correlation with body and importance of a Ghata Yoga
ii. Major concepts of Shiva Svarodaya –
    a. Navaprakaranam – 9 chapters
    b. Bhuta siddhi: A play of Pancha mahabhutas
    c. Description & Location of 10 Principle Nadi-s

PRACTICAL

All practices of 1st Year Syllabus **(20Hrs)**

1. **Asanas** **(30Hrs)**

i. Standing
a. Padangushtasana
b. Padahastasana (Advanced)

ii. Sitting
a. Siddhasana
b. Bhadrasana
c. Samasana
d. Swastikasana
e. Simhasana
f. ParivartaJanusirshasana
g. Tolangulasana
h. ArdhaMatsyendrasana – 2
i. Kurmasana
j. Mayurasana
k. Sirshasana

iii. Prone
a. Shalabhasana – Advanced
b. Bhujangasana – Advanced
c. Navasana -Advanced

iv. Supine
a. Yoga nidrasana
b. Garbhasana
c. Naukasana - 2

4. **Pranayama** **(10Hrs)**
    a. Surya bhedana
    b. Chandra bhedana
    c. Surya Anuloma
    d. Chandra Anuloma

5. Kriya **(10Hrs)**
    i. VastraDhauti
    ii. Trataka – Jyoti & Bindu

Recommended books:

1. Hatha Yoga Pradipika –Swami Swatmarama
2. Gheranda Samhita - Kaivalyadham
3. Asanas – Swami Kuvalyananda
4. ShivaSwarodaya – Kaivalyadham
5. Four Chapters of Freeedom – Swami Satyananda Saraswati
6. Commentary on Patanjali Yoga Sutras – Taimini
7. Light on Yoga – BKS Iyengar
8. The Six Systems of Indian Philosophy – Swami Harshananda
9. The Vedas – Sri Chandrashekhara Saraswati
10. Yoga Mimamsa –Kaivalyadham

Subject title: BASIC PHARMACOLOGY
Subject Code: BNYS 206 T

Total Number of Hours: 100		Theory: 100	Practical: NA	
SCHEME OF EXAMINATION				
Total Marks: 150				
Theory: 150			Practical: NA	
Final Theory Exam	Internal Assessment	Viva Voce	Final Practical Exam	Internal Assessment
80	20	50	NA	NA

Goals and objectives

Goal:

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

Objectives

Knowledge:

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

- Illustrate pharmacokinetics and pharmacodynamics of essential and common drugs

Skills:

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

- Be proficient in describing pharmacokinetics and pharmacodynamics of essential and common drugs
- Observe medical ethics in his professional practice

THEORY PAPER – (BNYS-206 T)

Unit-1: General Pharmacology **(13Hrs)**

i. Nature and sources of drugs
ii. Routes of administration
iii. Absorption and bioavailability of a drug – factors affecting drug absorption and its bioavailability
iv. Distribution of a drug in the body
   a. Plasma concentration
   b. Drug storage
   c. Placental transfer
v. Fate of the drug
vi. Drug excretion
vii. Drug receptors
viii. Mechanism of action of a drug – types of drug action
ix. Adverse reaction to drug
x. Drug toxicity in man –
   a. drug intolerance
   b. hemopoeitic toxicity
   c. hepatotoxicity
   d. nephrotoxicity
   e. abnormalities of taste and smell

f. behavioral toxicity
g. production of a disease
h. electrolyte disturbances
i. endocrine disturbances
j. skin toxicity
k. carcinogenesis
l. teratogenicity
m. drug dependence

xi. Factors modifying the effects of a drug
xii. Role of a placebo
xiii. Drug interaction

Brief description of the following drugs

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

Unit -2: Drugs acting on the CNS (12Hrs)

i. General sedatives
ii. Anticonvulsant drugs
iii. Opiod and Non-Opiod analgesics
iv. Analgesics, antipyretics and non-steroidal anti-inflammatory drugs (NSAID)
v. CNS stimulants – Xanthine alkaloids
vi. Psychopharmacology
   a. Anti-anxiety drugs
   b. Anti-depressant drugs – Classification, actions, adverse reaction (monoamine oxidase inhibitors, tricyclic compounds, carbamazepine, lithium)
   c. antipsychotics and antimania
   d. Psychotogenic drugs – LSD, Mescaline, Cannabis

Unit- 3: Drugs acting on ANS (9Hrs)

a. Cholinergic system and drugs
b. Anticholinergic drugs
c. Adrenergic system and drugs
d. Alpha blockers
e. Beta blockers
f. Skeletal muscle relaxants
g. Anti-Parkinsonian drugs
h. Local Anesthetics – adverse reactions

Unit -4: Drugs used in Respiratory Disorders (5Hrs)

i. Expectorants, Central cough suppressants, antitussives, mucolytic agents
ii. Pharmacotherapy of bronchial asthma and rhinitis
   a. Drug therapy during an acute attack
   b. Prevention of acute attacks
   c. Treatment of status asthmaticus
   d. Treatment of acute respiratory failure
   e. Treatment of chronic persistent asthma
   f. Drug therapy of rhinitis
   g. Therapeutic gases- oxygen, carbon di oxide

Unit -5: Cardiovascular drugs (14Hrs)

i. Drugs affecting renin-angiotensin system and plasma kinins
ii. Calcium channel blockers
iii. Congestive cardiac failure, Digitalis
iv. Pharmacotherapy of cardiac arrhythmias – Sodium channel blockers, beta blockers, potassium channel blockers, calcium channel blockers
v. Drugs used in angina and myocardial infarction
vi. Pharmacotherapy of Hypertension
vii. Water, Electrolytes and drugs affecting Renal functions (Nutritional supplementation therapy, vitamins)
viii. Diuretic and Anti-diuretic drugs

Unit -6: Drugs acting on Blood and blood forming organs (6Hrs)

i. Drugs effective in iron deficiency anemia, treatment of acute iron poisoning
ii. Drugs affecting coagulation
iii. Fibrinolytics, antifibrinolytics and antiplatelet drugs
iv. Immunotherapy, immuno-suppressants and immune-stimulant
v. Biogenic Amines and Polypeptides (Histamine and Antihistamine drugs
vi. Leukotrienes, Cytokines & PGs)

Unit -7: Drugs used in GIT disorders (7Hrs)

i. Appetizers, Digestants, Carminatives, Appetite suppressants and agents lowering serum lipid
ii. Antiemetics
iii. Drugs for diarrhea
iv. Pharmacotherapy of constipation
v. Pharmacotherapy of peptic ulcer

Unit- 8: Chemotherapy (24Hrs)

i. Antimicrobials - general considerations
ii. Classification of drugs based on mechanisms (affecting cell wall synthesis, destruction of cell membrane, affecting metabolism, affecting protein synthesis, affecting RNA polymerase, DNA gyrase)
iii. Antiseptics and Disinfectancts

Unit- 9: Drugs used in Endocrine disorders (10Hrs)

i. Thyroid and antithyroidal drugs
ii. Insulin and oral antidiabetic drugs
iii. Adrenal cortical steroids
iv. Gonadotropins, estrogens, progestins
v. Antifertility agents and ovulation inducing drugs

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.

Recommended books:

1. Pharmacology and Pharmacotherapeutics – RS Satoskar, SD Bhandarkar, SS Ainapure
2. Essentials of Medical Pharmacology – KD Tripathi
3. Pharmacology – Rang and Dale

Subject title: COLOUR THERAPY AND MAGNETO BIOLOGY
Subject Code: BNYS 207 T & BNYS 207 P

Total Number of Hours: 150		Theory: 90		Practical: 60
SCHEME OF EXAMINATION				
Total Marks: 200				
Theory: 130			Practical: 70	
Final Theory Exam	Internal Assessment	Viva Voce	Final Practical Exam	Internal Assessment
80	20	30	60	10

Goals and objectives
Goal:

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

Objectives
Knowledge:

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

- Demonstrate basic understanding of principles along which colours and magnets can be used as therapeutic agents, along with history of therapeutic uses of colours and magnets;
- Understandbio-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;
- Be aware of the contraindications and harmful effects of colours and magnets;
- Illustrate classification of colours, physics of light, electromagnetic spectrum, pathway of vision, human aura, chakras, heliotherapy, colour breathing, chromo charging, and latest research, applying the same to disease management;

Skills:

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

- Diagnose various diseases and disorders of the body and mind using the principles of colour diagnosis;
- Outline and implement a plan of treatment using colours and magnets as therapeutic tools
- Evaluate the therapeutic values of colours and magnets in treatment of various diseases
- Utilise latest research finding in improving his/her professional practice

THEORY

Magneto-biology

Unit -1: Introduction to Magnetotherapy **(5Hrs)**

i. Definitions of magneto therapy
ii. Historical highlights
iii. Vedic references related to magneto therapy
iv. Biomagnetism
v. Effects on plants, birds and animals.
vi. Effects on mankind
vii. Principles electromagnetism

Unit -2: Magnets and Magnetism **(10Hrs)**

i. Types of magnets
   Natural, Artificial, Permanent, Electromagnets
ii. Classification of magnets according to
   Power, Shapes, Clinical use
iii. Physical properties of magnets
   Magnetic permeability, Ferromagnetic materials, Antiferromagnetic materials, Paramagnetic materials, Diamagnetic materials

Unit -3: Magnetic field and its impact on biological systems **(15Hrs)**

i. Measurement of magnetic field
ii. Mechanism of action of magnets in the body
iii. Properties effects and corresponding features of north & south poles
iv. Maintenance of permanent magnets
v. Magnetic field deficiency syndrome
vi. Magnetic overload
vii. Earth as a huge magnet
viii. Effect of biomagnetism in various organ systems

Unit- 4: Use of Magnets in Therapy **(20Hrs)**

i. Modes of application of magnets
   a. General
   b. Local
   c. Different kinds of magnetic devices used in application of therapy
   d. Magnetic charging , mechanism, dosage and its effect and limitations
      a) Water
      b) Oil
      c) Milk
      d) Honey
ii. Magnetic therapy through shad chakras
iii. Contraindications, complications, and limitations of magneto therapy.
iv. Harmful effects of EMF and measures for minimizing it.

<u>Colour Therapy</u>

Unit- 5: Introduction to Colour Therapy **(5Hrs)**

i. Definition of colour therapy
ii. Historical highlights
   a. Ghadiyali's principle
   b. Babbitt postulates
   c. Modern history of color therapy
iii. Classification of colors
iv. How do rainbows form

Unit -6: Biophysics of Light **(15Hrs)**

i. Physics of light
   a. Electromagnetic spectrum
ii. Pathway of vision and color sensing

iii. The human aura and colors
iv. Relation of colors with shad chakras
v. Impact of color sense on emotions and psychology
vi. Therapeutic effect of colors

Unit 7: Sun Therapy / Heliotherapy **(10Hrs)**

i. Introduction to Sun therapy
ii. Health benefits
iii. Physiological and chemical properties of sunlight
iv. Modes of application, plantain leaf sun bath, chromo thermoleum
v. Procedure, precaution, indication and limitations.
vi. Various methods of Sun Bathing
    a. Dr. Rikli's method of Sun bath
    b. Dr .Kuhne's method of sun bath

Unit- 8: Advanced colour therapy **(10Hrs)**

i. Photo chemo therapy
ii. Photo biological coloured lighting to produce immune regulation
iii. Color breathing
iv. Chromo charging of water, oil honey and food stuffs. And their effect on health and disease.
v. Limitation and contraindications of chromo therapy
vi. Research updating related to chromo therapy

PRACTICAL

1. Procedural standards / guidelines for application of magnets **(2Hrs)**
2. General application – lead system of application **(4Hrs)**
3. Local application **(4Hrs)**
    i. high power magnets
    ii. Medium power magnets
    iii. Low power magnets
    iv. Specialized magnetic devices
4. Case documentation and application of magneto biology and color therapy - at least 20 cases **(40Hrs)**
5. Application of different colours **(10Hrs)**
    i. Chromo disc
    ii. Chromo lens
    iii. Chromo thermoleum
    iv. AthapaSnana
    v. Sun therapy/ Heliotherapy

Recommended books:

1. The book of magnetic Healing by Roger Coghill
2. Magnet therapy – by Ghanashyamsingh Birla and Colette Hemlin
3. Color therapy - Jonathan Dee and Lesley Taylor
4. Healing with color –Theo Gimbel
5. The power of color – Dr. Marton Walker

Subject title: FORENSIC MEDICINE
Subject Code: BNYS T 208 & BNYS P208

Total Number of Hours: 100		Theory: 100	Practical: 40	
SCHEME OF EXAMINATION				
Total Marks: 150				
Theory: 150			Practical: NA	
Final Theory Exam	Internal Assessment	Viva Voce	Final Practical Exam	Internal Assessment
80	20	50	NA	NA

Goals and objectives

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.

Objectives

Knowledge:

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

- Outline basic medico-legal aspects of hospitals and general practice;
- Define medico-legal responsibilities of a general physician working in a rural primary health center or an urban health center.

Skills:

- After the completion of the course, the student shall be able to:
- Observe and infer well, to enquire in criminal and medico-legal matters
- Diagnose and manage acute poisoning and chronic toxicity
- Be proficient in post mortem examinations including interpretation of findings
- Observe medical ethics in his professional practice

THEORY PAPER- BNYS -208 T

Forensic Medicine

Unit -1: Medical Law and Ethics (10Hrs)

i. Indian Medical Council, State Medical Councils - their functions and disciplinary control
ii. Rights and privileges of an RMP
iii. Duties of an RMP
iv. Medical Ethics - Hippocratic Oath, The Indian Code of Medical Ethics
v. Professional Misconduct
vi. Medical Etiquette
vii. Consent, Doctrine of informed consent
viii. Professional Negligence - civil negligence, criminal negligence, ethical negligence, Res Ispa Loquitur, Contributory negligence, Corporate negligence, Product liability, Therapeutic misadventure, Vicarious liability, Novus Actis Interveniens, Elements of a negligent action
ix. Professional secrecy and Privileged communication
x. Medical Indemnity Insurance

xi. Medical Records
xii. Organ Transplantation, Transplantation of Human Organs Act
xiii. Consumer Protection Act
xiv. Workman's Compensation Act
xv. NHRC
  a. Composition
  b. General functions
  c. Medicolegal functions
xvi. Prenatal Sex Determination Test (PNDT) Act
xvii. HIV- medicolegal aspects

Unit- 2: Legal Procedure **(7Hrs)**

i. Forensic Medicine - definition
ii. Inquest, types of inquest
iii. Civil case and criminal case
iv. Courts
v. Procedure of calling a witness to court
vi. Procedure in court
vii. Medical evidence, types
viii. Witnesses, types
ix. Conduct of a doctor in court
x. Offence- cognisable, noncognisable, contempt of court
xi. The scene of crime
xii. Criminal Procedure Code
xiii. Indian Evidence Act
xiv. Euthanasia – Synonyms, Classification, Arguments in favour, Arguments against Current legal status in India

Unit-3: Death **(10Hrs)**

i. Definition, Bishop's triad of life, definition of Thanatology
ii. Suspended animation
iii. Types
iv. Brain death
v. Sudden death
vi. Signs of death
vii. Presumption of death
viii. Presumption of survivorship
ix. Determination of time since death

Unit- 4: Identification **(15Hrs)**

i. Definition
ii. Types of identification
iii. Race
iv. Religion
v. Sex
vi. Age
vii. Stature
viii. Anthropometric measurements
ix. Dactylography
x. Tattoo marks
xi. Scar marks

xii. Hair and fibres
xiii. DNA fingerprinting
xiv. Personal identification (anthropometry and biometry)9
xv. Genetic identikit

Unit- 5: Medicolegal autopsy (10Hrs)

i. Definition, types
ii. Objectives / purpose
iii. Rules / legal requirements to conduct PM examination
iv. Procedure- external examination, internal examination - thoracic, abdominal and cranial cavities, incline. examination of structures of the neck and spinal cord
v. Preservation of viscera - when, which, preservatives recommended
vi. Blood and other medicolegally important stains

Unit 6: Medicolegal wounds- classification and study and medicolegal aspects (10Hrs)

i. Classification of injuries
    a. Mechanical injuries
    b. Thermal injuries
    c. Injuries due to heat and cold
    d. Injury caused by electricity and lightning
    e. injury produced by radiation
ii. Starvation

Unit -8: Asphyxia (8Hrs)

i. Definition
ii. Anoxia - types
iii. Mechanical and non-mechanical asphyxia
iv. Clinical asphyxiation and its stages
v. Pathognomonic signs in a case of asphyxia
vi. Classification of violent asphyxia
vii. Suffocation, Smothering, Overlaying, Gagging, Choking, Cafe coronary, Traumatic asphyxia
viii. Hanging
ix. Strangulation, Throttling, Burking, Bansdola, Mugging, Garrotting, Palmar strangulation
x. Drowning

Unit- 9: Sexual offence (5Hrs)

i. Introduction
ii. Types
iii. Natural sexual offence - incest, rape
iv. Unnatural sexual offence
v. Abnormal sexual perversion
vi. Virginity
vii. Impotence and sterility
viii. Pregnancy
ix. Delivery
x. Abortion

Unit -10: Infanticide **(4Hrs)**

i. Introduction
ii. Stillbirth
iii. Deadborn
iv. Viability, Rule of Hasse
v. Signs of live birth
vi. SIDS
vii. Munchausen syndrome by proxy

Unit- 11: Insanity and Forensic Psychiatry **(4Hrs)**

i. Introduction
ii. Medicolegal importance of insanity
iii. Classification of insanity
iv. Disorders of cognition
v. Feigned insanity
vi. Restraining of a lunatic

Toxicology

Unit- 1: General considerations of poisoning **(3Hrs)**

i. Introduction
ii. Medicolegal aspects of poisoning
iii. Poisoning in India
iv. Source of poisons
v. Action of poisons
vi. Fate of poisons in the body
vii. Diagnosis of poisoning in human beings
viii. Classification of poisons
ix. Factors modifying action of poisons
x. General line of treatment

Unit -2: Poisons **(4Hrs)**

i. Corrosives, Nonmetallic poisons, Metallic poisons
ii. Organic irritant poisons
  a. Somniferous poisons
  b. Inebriant poisons
  c. Deliriant poisons
  d. Drug dependence
  e. Food poisoning
  f. Spinal poisons
  g. Cardiac poisons
  h. Asphyxiants
  i. Miscellaneous

PRACTICALS

Unit-1: Autopsies - 10	**(20Hrs)**
Unit -2: Age estimation	**(4Hrs)**
Unit -3: Skeletal remains	**(2Hrs)**
Unit- 4: Spotters	**(4Hrs)**
Unit -5: Examination of injured	**(2Hrs)**
Unit- 6: Alcoholic	**(2Hrs)**
Unit- 7: Psychiatric	**(2Hrs)**
Unit -8: Toxicology	**(4Hrs)**

Recommended books:

1. Medical Jurisprudence – Modi
2. A textbook of Forensic Medicine – Narayana Reddy
3. A textbook of Forensic Medicine – MRK Krishna
4. Fundamentals of Forensic Medicine and Toxicology - R. Basu
5. Textbook of Forensic Medicine and Toxicology - VV Pillay

Reference books

1. The essentials of Forensic Medicine – Dr. CJ Polson, DJ Gee and B. Knight
2. Forensic Medicine – Corden and Shapiro
3. Principles and practice of Medical Jurisprudence – Taylor‘s

Third Year Syllabus (12 months)

Subject title: MANIPULATIVE THERAPY
Subject Code:
MANIPULATIVE THERAPY Theory Paper: BNYS301 T
MANIPULATIVE THERAPY Practical: BNYS301 P

Total Number of Hours: 250		**Theory:** 150		**Practical:** 100
SCHEME OF EXAMINATION				
Total Marks: 200				
Theory: 130			**Practical: 70**	
Final Theory Exam	**Internal Assessment**	**Viva Voce**	**Final Practical Exam**	**Internal Assessment**
80	20	30	60	10

Goals:

The goal of teaching manipulative therapy to the undergraduate student is to provide them with a comprehensive understanding of science and modes of application of different manipulative modalities like massage, chiropractice, osteopathy, and aromatherapy with preventive, curative and rehabilitative therapy.

Objectives

Knowledge:

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

- Understand the principles and historical highlights of massage and manipulative techniques
- Demonstrate basic understanding of principles and procedures of different types of massage, their physiological effects, indications, and contraindications
- Delineate the principles and procedures of various manipulative therapies like chiropractic, osteopathy, reflexology and aromatherapy
- Describe essential oils with respect to the extraction, uses and combination that are therapeutically used

Skills:

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

- Perform different types of massage and manipulative therapies, such as osteopathy, chiropractice, aromatherapy, Swedish massage, Kellogg's massage, Shiatsu, Geriatric massage, Pediatric massage, antenatal massage, Ayurvedic massage, etc.
- Use therapies such as reflexology and zone therapy in their professional practice for musculoskeletal disorders, etc.

THEORY

Unit 1: Introduction and historical highlights of Massage & Manipulative techniques.
(5 Hrs)

Unit 2: Classification of (lubricants) massage (15 Hrs)

a. Basic therapeutic massage (Swedish) techniques. -procedure, indications, contraindications, physiological action
b. Joint movement in massage therapy
c. Massage to local areas

Unit 3: Professional standards of massage professionals (5 Hrs)

Unit 4: Physiological effects, indications, and contraindications of massage on various organ systems (15 Hrs)

Unit 5: Various types of massage: (40 Hrs)

a. Kellogg's massage
b. Shiatsu
c. Pediatric massage
d. Geriatric massage
e. Ayurvedic massage- terminology, procedure manipulation
f. Massage for antenatal care
g. Thai yogic massage
h. Hot-stone massage
i. Balanese
j. Dry brush massage
k. Deep tissue massage
l. Powder massage
m. Vibratory massage
n. Ayurvedic massage- terminology, procedure manipulations
o. Panchakarma in brief

Unit 6:Chiropractic (15 Hrs)

a. History
b. Physiological effect
c. Spinal manipulative therapy
d. The importance of spine in chiropractic
e. Chiropractic examination
f. Treatment or various diseases

Unit 7: Osteopathy (15 Hrs)

a. Definition
b. History
c. Basic principles
d. Relation of osteopathy in musculoskeletal system

Unit 8: Aromatherapy **(10 Hrs)**

i. Definition, origin, history
ii. Essential oils
   a) Types
   b) Extraction –Distillation, cold pressing or expression, solvent extraction method
   c) Storage of essential oils
   d) How to recognize an essential oil
   e) How to select aroma oils
   f) How essential oils work
   g) 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, soybean oil, sunflower oil.
iii. Different methods of using essential oils- inhalation, diffusers, vaporizers, massage, baths, footbaths, potpourri, compresses, oral intake, beauty treatment, room spray, insect repellents etc.
iv. Description of different essential oils and their benefits
   a) Amrette seeds, aniseed, angelica, basil, bergamot, black pepper, camphor, cardamom, chamomile, clove bud, cedar wood, cypress clary sage, eucalyptus, fennel, frankincense, geranium, ginger, juniper berry, lavender, lemon, lemongrass, marjoram, neroli, orange, palma rose, peppermint, patchouli, pine, rose, rosemary, sandalwood, tarragon, tea tree, thyme (white), vetiver, ylang-ylang
v. The best essential oils
   a) 5 fragrance categories- green, floral, citrus, woody, spicy
   b) Mixing of aroma oils, equipment required for mixing oils

vi. Precautions for use of aroma oils- skin patch test, testing essential oils in its pure state
vii. Ill effects of aroma oils- in eyes, toxic effects, allergic effects etc.
viii. Careful handling of essential oils
ix. Contraindications
- Oils to be avoided- phototoxic or photosensitive oils, oils to be avoided in pregnancy, oils that cause skin irritation etc.

Unit 9: Reflexology and Zone therapy **(15 Hrs)**

i. What is reflexology, history, and development
ii. How does it work
iii. Body and its reflex zones
iv. Application, indications, and contraindications
v. Preventive effects of reflexology

Unit 10: Milestones of females and its management through massage **(15 Hrs)**

PRACTICAL

Unit1: Full Body Massages (10)
Unit 2: Chiropractic care
Unit 3: TENS
Unit 4: Activator adjustable tool (Impulse Device)
Unit 5: Partial massages (35)
Unit 6: Panchakarma demonstration and identification of different oils
Unit 7: Demonstration of different methods of application

i. Inhalation
ii. Compression
iii. Diffuses

Unit 8: Local baths

TEXTBOOKS

1. Massage – George Downing
2. Massage therapy – Dr. JH Kellogg
3. Massage – Constant Young
4. The complete Book of Massage – Claire Maxwell-Hudson

Subject Title: ACUPUNCTURE & ACUPRESSURE
Subject Code:
Acupuncture & Acupressure Theory Paper: BNYS302 T
Acupuncture & Acupressure Practical: BNYS302 P

Total Number of Hours: 250		**Theory:**150		**Practical:** 100
SCHEME OF EXAMINATION				
Total Marks: 200				
Theory: 130			**Practical: 70**	
Final Theory Exam	**Internal Assessment**	**Viva Voce**	**Final Practical Exam**	**Internal Assessment**
80	20	30	60	10

Goals:

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.

Objectives

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

- Illustrate the definition of Acupuncture;
- Understand the principles and historical highlights of Acupuncture;
- Explain the concepts and theories behind the mechanism in which acupuncture works, both traditional and modern;
- Demonstrate a basic understanding of procedures of different styles of Acupuncture and related therapeutic modalities, such as traditional Acupuncture, scalp Acupuncture, Auriculotherapy, Acupuncture anesthesia, Reflexology, Ozone therapy, Acupressure, etc.;
- Describe basic and advanced tools used in acupuncture;
- Be aware of the contraindications and dangers of Acupuncture, so as to avoid these in his/her professional practice.

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

- Diagnose common disease and the disorders using diagnostic techniques employed in Acupuncture, such as Tongue Diagnosis, Pulse Diagnosis, etc.
- Demonstrate skill in topographically locating meridians and Acupuncture points on the human body
- Perform needling and other essential skills in delivering Acupuncture therapy to a patient.
- Plan, implement and evaluate Acupuncture sessions with expertise in his/her professional practice.

Integration:

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

THEORY

Unit- 1: Introduction, history, traditional & modern theories of Acupuncture and Acupressure. **(20 Hours)**

- **Introduction & History of Acupuncture & Acupressure** -- Definition and history of acupuncture & acupressure, story of acupuncture needles, philosophy of TAO.
- **Traditional theories of Acupuncture** -- (Concept Chi, Principles of Yin & Yang, Network of Jing-Luo, Five elemental & Organ clock theories, traditional laws of energy flows).
- **The foundations of Chinese Medicine** --**The Yin Yang Theory** (History, Nature of Yin-Yang Concept, Application of Yin-Yang to Medicine, Application of the four principles of Yin-Yang to Medicine); **Five Elements Theory** (Five elements in Nature, Five elements in Physiology, Five elements in Pathology, Five elements in Diagnosis, Five elements in Acupuncture therapy); **Vital Substances** (Concept of Qi, Concept of Blood, Concept of Body fluids, Concept of Mind / Shen, Transformation of Qi).
- **Modern theories of Acupuncture** -- (Neurological, neurotransmitter, bio-electrical, embryological, defence mechanism - tissue regeneration, hypnosis and placebo theories).

Unit- 2: Different tools & techniques in Acupuncture and Acupressure **(15 Hours)**

- **Different types of acupuncture needle** --- Filiform, triangular, seven-star, press, ball bearing, hot, roller, hidden subdermal needles.
- **Sterilization of needles** --- Physical & Chemical methods.
- **Techniques of needling** --- Depth & angle of needling.
- **Posture of the patients** --- Sitting & lying down position
- **Location of acupuncture points** --- Anatomical approach, finger, proportional, palpitation measurement, patient positioning and body movements, tender points, electrical location, location by reference to other points, cunometer, using centimeter scale and spreading hands technique.
- **Different rules for the selection of acupuncture points** by applying traditional and modern theories of acupuncture.
- **Nomenclature of the Acupuncture** -- Peculiar points in acupuncture.
- **Location of acupuncture points**--- Anatomical approach, finger, proportional, palpitation measurement, patient positioning and body movements, tender points, electrical location, location by reference to other points, cunometer, using centimeter scale and spreading hands technique.
- **Effects** of acupuncture (Subjective & Objective effects), **Contraindications** of acupuncture (Relative & Absolute contraindications), **complications and precautions** of acupuncture.
- **Different tools** use in Acupressure and their applications.

Unit- 3: Zang-Fu theory in Acupuncture: (15 Hours)

- **TCM functions of Yin organs** (Introduction, Functions of Lung, Spleen, Heart, Kidney, Pericardium, Liver, Yin organ Inter-relationships)
- **TCM functions of Yang Organs** (Functions of Large intestine, Stomach, Small intestine, Urinary bladder, Triple Warmer, Gall Bladder)
- **TCM Functions of Six Extra-ordinary Yang Organs** (Uterus and its functions, Brain and its functions, Bone marrow and its functions, Bones and its functions, Blood vessels and its functions, Gall bladder and the four seas)
- **The Eight extra-ordinary vessels** (Governing Vessel, Directing Vessel, Penetrating Vessel, Girdle Vessel, Yin Stepping Vessel, Yang Stepping Vessel, Yin linking Vessel, Yang Linking Vessel)

Unit- 4: The concept of meridians: (30 Hours)

a. Lung Meridian (Lu/ L)
b. Large Intestine Meridian (LI)
c. Stomach Meridian (St)
d. Spleen Meridian (Sp)
e. Heart Meridian (H/ Ht)
f. Small Intestine Meridian (SI)
g. Urinary Bladder Meridian (UB)
h. Kidney Meridian (K/ Kid)
i. Pericardium Meridian (P)
j. Triple Warmer/ Sanjiao Meridian (TW/ SJ)
k. Gall Bladder Meridian (GB)
l. Liver Meridian (Liv)
m. Governing Vessel/ DU Meridian (GV/ DU)
n. Conceptional Vessel/ REN Meridian (CV/ REN)
o. Extra Meridian
p. Extraordinary Meridian

UNIT- 5: Examination methods of Traditional Chinese Medicine (TCM) (10 Hours)

- **Diagnosis by Observation (**Observation of Constitutional traits, Five element body types, Five element correspondences)
- **Diagnosis by Interrogation (**Nature of Diagnosis by Interrogation, The 10 Traditional questions)
- **Diagnosis by palpation** (Pulse diagnosis)
- **Diagnosis by observing body signs** (Tongue diagnosis)

UNIT- 6: Special methods in Acupuncture & Acupressure (10 Hours)

- **Auriculotherapy -** Surface anatomy of Ear, different areas, location of points, needling technique and therapeutic indications of Auriculotherapy.
- **Scalp Acupuncture -** Surface anatomy of Scalp, different areas, location of points, needling technique and therapeutic indications of Scalp Acupuncture.
- **Acupressure, Reflexology & Zone therapy -** Definition, history, physiological effects, indications and contraindications of Acupressure, Reflexology and Zone therapy.

UNIT- 7: Different types of stimulation techniques in Acupuncture (15 Hours)

- **Ancient stimulation techniques --**
  - **Needling –** (different movement, manipulation of needle, degree of stimulation, duration of stimulation).
  - **Moxibustion** - (Origin and development of Moxibustion, Concept & basics Moxa therapy, Specific characteristics and range of applications of moxa therapy, Contra indications and cautions of moxibustion, Moxibustion supplementing and draining, Postures & order of execution of moxa therapy, Post moxa care, Moxibustion sensation and quantification, moxibustion treatment principles, Primary therapeutic effect of moxibustion).
  - **Cupping –** (Introduction & history of cupping, Concepts & functions, Types & tools of cupping therapy, Precautions of cupping therapy, Procedure of cupping therapy, Indications and Contra-indications).

- **Modern stimulation techniques –**
  - **Elector-Acupuncture -** (Introduction, Electroacupuncture – East & West in historical context, Scientific & Clinical Foundations, Electromagnetism & Vibration, Electroacupuncture in context – Effects of Electrotherapy, Neurophysiology, acupoints and Meridians)
  - **TENS Acupuncture –** (Introduction, procedure, indications & contraindications)
  - **LASER Acupuncture -** (Introduction, procedure, mechanism, indications, contraindications, advantages & cautions)
  - **Ultrasound Acupuncture –** (Introduction, procedure, mechanism, indications, contraindications, advantages)
  - **Periosteal Acupuncture -** (Introduction, procedure, therapeutic applications, contraindications, complications)
  - **Point injecting -** (Introduction, procedure, indications & contraindications)
  - **Embedding therapy -** (Introduction, procedure, indications & contraindications)

UNIT- 8: Recent trends in Acupuncture (10 Hours)

- **Acupuncture Anaesthesia -** Introduction, history, procedure, indications, contraindications and precautions of acupuncture anaesthesia

- **Tan's Balance method Acupuncture –** (Introduction, Dr Tann's core essentials, New concepts and five system strategies, Dr Tan's point prescriptions, Global balance and meridian structure)

UNIT- 9: Acupuncture therapeutics (25 Hours)

- **Causes of disease according to TCM** (Introduction, Internal causes of disease, External causes of disease)
- **Pathology of diseases according to TCM** (Pathology of Full & Empty Conditions, Pathology of Yin – Yang imbalance, Pathology of the Qi mechanism)
- **Aetiology, diagnosis and treatment modalities** of Neurological, pulmonological, cardiovascular, psychological, rheumatological, osteological, spinal disorders, endocrinological, gastrointestinal, genito-urinary, metabolic disorders.

PRACTICALS

Unit 1: Demonstration of needling techniques -- (On potato/ brinjal/ orange); Practice of needling on self; Practice of needling on others (friends/ relatives), Practice of needling on patients. **(20 Hours)**

Unit 2: Demonstration of Scalp Acupuncture, Auriculotherapy, **Electro-Acupuncture, Moxibustion, Cupping, TENS Acupuncture** -- (Practice on friends/ relatives/ patients) **(20 Hours)**

Unit 3: **Demonstration of Acupressure, Reflexology, Zone therapy and Tan's Balance method of Acupuncture** (Practice on friends/ relatives/ patients) **(10 Hours)**

Unit 4: Practice of Pulse and Tongue diagnosis -- (On friends/ relatives/ patients) **(10 Hours)**

Unit 5: Each student should write 20 case history as per TCM format -- (Follow the TCM case history pattern, Identifying the TCM & modern aetiology for the disease, Diagnosis approach as per the TCM & modern method, Prescription of the treatment modalities as per the TCM & recent/ advanced trends) **(20 Hours)**

Unit 6: Each student should give treatment for at least 20 patients during their course work (Treatment includes -- Acupuncture, Acupressure, Scalp Acupuncture, Auriculotherapy, Electro Acupuncture, Moxibustion and Cupping therapy, TENS Acupuncture etc). **(20 Hours)**

Reference books

1. Clinical practice of Acupuncture – A. L. Agarwal.
2. Clinical Acupuncture – Dr. Anton Jayasurya.
3. Advanced Acupuncture therapy – Arjun. L. Agarwal, Govind N Sharma.
4. Principles and Practice of Acupuncture – Dr. J. K. Patel.
5. The Foundations of Chinese Medicine, Maciocia, Published by ELSEVIER, Churchill Livingstone
6. The Practice of Chinese Medicine, Maciocia, Published by Churchill Livingstone
7. Acupoints Made Easy by Clara Cohen, Creator of AcuPro Academy, CANADA
8. TCM Treatments Made Easy by Clara Cohen, Creator of AcuPro Academy, CANADA
9. Electroacupuncture – A Practical manual and resource, edited by David F Mayor, published by Churchill Livingstone, ELSEVIER
10. Illustrated Chinese Moxibustion – Techniques & Methods – By Prof Chang Xiaorong, Prof Hong Jing, Prof Yi Shouzia
11. Traditional Chinese Medicine – Cupping Therapy – by Illkay Zihni Chirali
12. Health in your Hands - Devender Vora.
13. Clinical Acupuncture and Moxibustion – Liu Gong Wang.
14. Fundamentals of Acupuncture and Moxibustion - Liu Gong Wang / Akira Hyodo.
15. Classical Acupuncture – The Standard textbook – Porket. Hempen, the China Academy.
16. Reiki:
    - Empowerment through Reiki – Paula Horan.
    - Reiki – Energy Medicine – Libby Barnett &Maggie Chamber with Susan Davidson.
17. Pranic Healing:
    - Pranic Healing using breathing with Healing mantras – Dr. L. R. Chowdhry.
    - Advanced Pranic Healing – Choa Kok Sui.
    - The Ancient Science and Art of Pranic Crystal Cleaning – Choa Kok Sui.

Subject title: YOGA & ITS APPLICATION

Subject Code:

Yoga and Its Application Theory Paper: BNYS303 T

Yoga and Its Application Practical: BNYS303 P

Total Number of Hours: 250		**Theory:** 100		**Practical:**150
SCHEME OF EXAMINATION				
Total Marks: 200				
Theory: 130			**Practical: 70**	
Final Theory Exam	**Internal Assessment**	**Viva Voce**	**Final Practical Exam**	**Internal Assessment**
80	20	30	60	10

Goals

The goal of teaching yoga and its applications to undergrauate student is to provide them with comprehensive understanding of yoga with reerence to traditional texts like *Patanjali Yoga sutras, Hatha Yoga Pratipika, Shiva Samhita, Ghrenda Samhita and Swara yoga;* various streams of Yoga, advanced meditative techniques like *Yoga nidra, Omkar,* cyclic meditation, *Vipasana* meditation and learn about their psychological & physiological benefits compared to exercises.

Objectives

Knowledge:

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

- Illustrate the knowledge of traditional texts like Patanjali Yoga Sutras, Hatha Yoga , Siva Samhita and Gheranda Samhita
- Understand the principles behind various meditative practices like Yoganidra, Om meditation, cyclic meditation, Vipassana and so on
- Explain about yoga in relation to its application in education, sports;
- Demonstrate basic understanding of procedures of stretching an exercise.
- Describe basic physiological changes in asana
- Be aware of the effects of Shatkriyas and their adverse effects

Skills:

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

- Describe the concept of yoga as explained in the traditional texts
- Deliver a meditative session using any o the meditative styles
- Implement various excercises loosening or eye exercises or stretching to complement yoga practice

THEORY

Unit 1: Introduction, principles and practice and effects of Meditation and Relaxation Techniques (10 hrs)

a. Yoga Nidra
b. Cyclic Meditation
c. Omkar Meditation
d. Mindfulness based stress reduction
e. Vipassana Meditation
f. Transcendental Meditation
g. Raja Yoga Meditation

Unit 2: Psychophysiological changes with yoga practices (20 hrs)

a. Biomechanics and Physiological effects of Asana
b. Psychophysiology of Pranayama
c. Physiological effects of *Shat kriya*
d. Psychophysiology changes with Meditation
e. Anatomical and Physiological changes with Bandhas and Mudras.

Unit 3: Applications of *Yoga* (20 hrs)

a. Yoga for personality development
b. Yoga in relation to sports and games
d. Yoga in social and political life
e. Yoga in Physical Culture
f. Yoga in occupational health
f. Yoga in education
g. Yoga for women
h. Yoga for children
i. Yoga for ageing
j. Yoga for promotion of positive health

Unit 4: Yoga and Mental Health (20 hrs)

a. Concept of Adhija and Anadhija Vyadhi
b. Yogic diagnosis (based on Panchakosha Theory)
c. Yogic Counselling
d. Psychology of spiritual growth and values

Unit 5: Stress Management through *Yoga* (10 hrs)

a. Understanding the concept of Stress
b. Physiological changes in the body during Stress
c. SMET

Unit-6: Meditation, relaxation and advanced techniques in Yoga (20 Hrs)

i. QRT – Quick Relaxation Technique
ii. IRT – Instant Relaxation Technique
iii. DRT – Deep Relaxation Technique
iv. Cyclic Meditation (Self management of excessive tension)
v. Pranic Energization Technique
vi. Mind Sound Resonance Technique
vii. Mind Imagery Technique
viii. Mastering the Emotions Technique
ix. Vijnana Sinchana Kaushala
x. Anandamrita Sinchanam
xi. *Drishtis*

PRACTICAL

Unit 1: All previous year asana – *Veerasana, Koormasana, Kukkutasana, Uttaankoormasana, Matsyendrasana, Padmamayurasana, Simhasana, Sarvangasana (all variants), Sirsasana* (all variants)

Unit 2: All loosening (*Sithilikarana Vyayama*) and breathing exercises

Unit 3: All previous year pranayama

Unit 4: All previous year kriyas – *Danda Dhouthi, Agnisara, Nauli, Bandas, Mudras.*

Textbooks

1. Autobiography of a yogi- Paramahamsa Yogananda
2. Yoga as philosophy and religion- SN Dasgupta
3. Yoga - The Science of Holistic Living-VK Yogi
4. A complete illustrated book of Yoga- Swami Vishnu
5. Encyclopedia of Indian physical culture- DC Mujumdar
6. Preksha meditation- Acharya Tulsi

Subject title: NUTRITION & MEDICINAL HERBS

Subject Code:

Nutrition and Medicinal Herbs Theory Paper: BNYS 304 T

Nutrition and Medicinal Herbs Practical: BNYS 304 P

Total Number of Hours: 250	**Theory:**150	**Practical:** 100

SCHEME OF EXAMINATION				
Total Marks: 200				
Theory: 130			**Practical: 70**	
Final Theory Exam	**Internal Assessment**	**Viva Voce**	**Final Practical Exam**	**Internal Assessment**
80	20	30	60	10

Goals:

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.

Objectives:

Knowledge:

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

- Describe fundamentals of nutrition, with respect to different nutrients and food groups;
- Illustrate details of nutritional requirements for different age groups, as well as pregnant and lactating women
- Demonstrate therapeutic application of nutrition for common diseases
- Compare modern nutrition to traditional; naturopathic diets;
- Have detailed knowledge of recent advances and studies, such as carcinogens in food, food additives, contaminants, etc.,
- Illustrate the use of specific herbs in common diseases, with therapeutic values.

Skills:

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

- Assess the nutritional status of a patient.
- Plan, implement and evaluate nutritional advice for people with different ages and patients of different diseases, including the use of herbs.

Integration:

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

THEORY

Unit 1: Basic nutrition: **(50 Hours)**

1. Definition of food, nutrition and nutrients
2. Carbohydrates – Classification, Properties, digestion, absorption and metabolism
    - Dietary fibers – classification and its importance

3. Proteins – Structure, classification and properties. Digestion, absorption and amino-acid and nucleotide metabolism.
4. Lipid – Structure, Classification and properties: Digestion and absorption. Lipid metabolism.
5. Vitamins - Classification, properties and metabolism and its functions, sources, deficiency & toxicity
6. Minerals – Classification, properties and metabolism and its functions, sources, deficiency & toxicity
7. Electrolytes, water and acid-base balance
8. Control of food intake (hunger physiology)
9. Body composition & factors affecting it.
10. Energy needs- assessments & requirements in humans & energy of food
11. RDA
12. Food groups, food pyramid & my food plate
13. Oxidative stress & antioxidants
14. Nutritional assessments
15. Food adultration
16. Food additives
17. Food contaminants & natural toxins
18. Dietary factors with anti-nutritional effects
19. Food exchange list

Unit 2: Life cycle nutrition: **(30 hours)**

1. Nutrition during pregnancy-
    - Physiological changes during pregnancy
    - Nutritional requirements during pregnancy
    - Maternal dietary intake & fetal outcome
    - Nutritional management in high-risk pregnancy
    - Dietary Guidelines during 1^{st}, 2^{nd} & 3^{rd} trimester pregnancy
2. nutrition during Lactation-
    - Physiology of lactation
    - Nutritional requirements during lactation
    - Nutritional management of problems faced during lactation
    - Dietary Guidelines during lactation
3. Nutrition during Infancy-

- Nutritional requirements during 0-6 months
- Nutritional requirements during 6-12 months
- Low-cost weaning foods
- Dietary Guidelines during infancy

4. Nutrition in Pre-schoolers –
    - Nutritional requirements in boys and girls upto 3-5 years of age
    - Problems faced in this age group & its nutritional management
    - Childhood obesity
    - Dietary Guidelines in preschoolers
5. Nutrition in school going children (6-15years)-
    - Nutritional requirements in school going children
    - Problems faced by this age group and its nutritional management
    - Dietary Guidelines
6. Nutrition in Adolescents-
    - Nutritional requirements in adolescents
    - Problems faced by this age group and its nutritional management (anorexia, bulimia, anemia, depression etc)
    - Dietary Guidelines in adolescents
7. Nutrition in Adults-
    - Nutritional requirements in adult man & women
    - Common metabolic Diseases & its nutritional management (obesity, Hypertension, Diabetes mellitus, stress management)
    - Dietary Guidelines in adults
8. Nutrition in Elderly/ geriatrics-
    - Nutritional requirements in geriatrics
    - Problems faced by this age group and its nutritional management
    - Dietary Guidelines in geriatrics

Unit 3: Applied nutrition & recent advances in clinical nutrition: (50hours)

1. Sports nutrition
2. Nutrient-nutrient interaction
3. Nutrient-drug interaction
4. Hypercatabolic state

5. Enteral nutrition – definition, types, indication, contraindications, complications, formulas used
6. Parenteral nutrition - definition, types, indication, contraindications, complications, formulas used
7. Prebiotics, probiotics, symbiotic & post-biotics
8. Nutraceuticals – pros & cons
9. Nutritional supplements – pros & cons
10. Functional foods- pros & cons
11. Phytochemicals/ phytonutrients
12. Food microbiology
13. Immuno-nutrition
14. Nutritional implications of plant-based diet (vegetarian diet), vegan diet.
15. Role of nutrition on mental health
16. Socio-cultural influence on nutritional status
17. Nutritional regulation of gene expression & epigenetics. (Role of specific nutrient in controlling gene expression)
18. Nutrition and medical ethics – interplay of medical decision, patients right & judicial system.
19. Nutritional counselling – communication, designing, implementation & evaluation.
20. Management of nutrition unit in hospital- quality, service, record, finance
21. Recent research studies in the field of nutrition.

Unit – 4: Medicinal herbs (20 hours)

1. Introduction to Herbology
2. Following herbs are to be studied with respect to their source and therapeutic uses. Botanical details can be avoided.

1.Embelicaofficinalis	2. Cassia fistula
3. Ficus glomerate	4. Vetiveriazizanodies
5. Cinnamomumcamphora	6. Mosardicacharantia
7. Tribulusterrestris	8. Myristicafragrans
9. Cuminumcyminum	10. Sesamumindicum
11. Ocimum sanctum	l2. Punicagranatum
13. Coriandrumsativum	14. Azadirachtaindica
15. Alliums cepa	16. Piper longum
17. Psoraleacorylifolia	18. Taxusbaccata
19. Aeglemarmelos	20. Semecarpusanacardium

21. Phyllanthusniruri
22. Piper nigrum
23. Trigonellafoenum – grade cum
24. Santalum album
25. Allium sativum
26. Mimosa pudica
27. Coruscalamus
28. Asparagus racemose
29. Rauwolfia serpentine
30. Curcuma long
31. Terminaliachebula
32. Ferula narthex
33. Syzygiumaramaticum
34. Terminaliabelerica
35. Zingiber Officinalis

PRACTICAL

i. Visits to different diet departments of modern medicine hospitals (10 Hrs)

ii. Menu planning using natural foods for different life stages (30 Hrs)

iii. Preparation of low-cost balanced diet for different population groups using natural foods (30 Hrs)

iv. Study of 20 cases- diseases at different life stages (20 Hrs)

v. Case studies of 10 with records (10 Hrs)

Textbooks

1. Davidson and Passamore Human Nutrition – Passamore
2. Clinical Dietetics and Nutrition – FP Antia
3. Normal Therapeutic Nutrition – Corinne Robinson
4. Essentials of Food and Nutrition – Swaminathan
5. Sprouts – JD Vaish*Yoga*Samsthan
6. Science and Art of Food and Nutrition – Herbert Shelton
7. Nutritive Values of Indian Foods – NIN (Hyd)
8. Publications of NIN, Hyderabad
9. Herbs that Heal – HK Bakhru
10. Charaka and *Sushruta Samhita*
11. Fundamentals of *Ayurveda* – Mahadev Shastri
12. Krause's food & nutrition therapy- L Kathleen Mahan
13. Krause's food & nutrition care process - L Kathleen Mahan

Subject title*:* NATUROPATHY DIAGNOSIS

Subject Code*:*

Naturopathy Diagnosis Theory Paper: BNYS305 T

Naturopathy Diagnosis Practical: BNYS305 P

Total Number of Hours: 200		**Theory:** 100		**Practical:** 100
SCHEME OF EXAMINATION				
Total Marks: 200				
Theory: 130			**Practical: 70**	
Final Theory Exam	**Internal Assessment**	**Viva Voce**	**Final Practical Exam**	**Internal Assessment**
80	20	30	60	10

Goals & Objectives

Goal:

The goal of teaching diagnostic methods in naturopathy to undergraduate students is to provide them with comprehensive knowledge of diagnostic methods employed traditional naturopaths that can be efficiently use to diagnose various diseases without the use of sophisticated technology

Objectives

Knowledge:

After completion of the course the student shall be able to

- Define and be aware of the historically significant developments in diagnosis procedures used in naturopathy
- Illustrate the characteristics of a healthy body with respect to naturopathic principles
- Describe the philosophical theories of causation of disease according to naturopathy
- Utilize knowledge of encumbrances ,their types an interpretation , along with, naturopathic ways of therapeutically correcting them
- Understand and diagnose the pathology or the preponderance to a pathology based on physical diagnosis, anthropometric measurements and gait patterns

- Describe the characteristics of normal an unhealthy skin in different diseases
- Comprehend the techniques and interpretations of stool and urine diagnosis correlating modern medical knowledge and Ayurvedic sthoola and mutra pariksha

Skills:

Use of different diagnostic procedures in naturopathy to effectively and accurately diagnose various diseases, such as facial diagnosis, stool and urine diagnosis.

THEORY

Unit 1: Facial diagnosis **(35 Hours)**

- Introduction to new science of healing, principles
- Historical high lights
- Comparison of healthy body and its functions in relation with modern science
- Anthropometry and other diagnostics tests
- Face organ map , different types of faces and its significance in facial diagnosis
- Foreign matter theory, toxemia theory, vitality theory
- Physiological and pathological perspective of foreign matter, toxemia and Morbid matter
- Unity of disease, Unity of cure- interpretation with contemporary medicine
- Encumbrance, its types, its interpretation with contemporary medicine
- Habits- significance, consequence and its correspondence in encumbrance
- Significance of naturopathy treatment modalities in correction of encumbrance.

Unit 2: Introduction to Iris diagnosis (**10 Hours)**

- Definition and Historical Highlights
- Anatomy of iris in detail
- Conceptual theories of Iridiagnosis

Unit 3: Science of Iridiagnosis **(30 Hours)**

- Comparison of the science of iridiagnosis with concepts of *Drishtipraraksha* in *Ayurveda* and ophthalmology in modern medicine.
- Technique in iris reading
- Normal and abnormal iris
- The vibratory theory and its significance
- Diagnostic chart
- Iridoscope
- Zones
- Sectoral division
- Interpretation of iris manifestation
- Inherent lesions and weakness
- Honey comb,

- Cataract
- Nerve rings
- Stomach ring
- What iridology can show and cannot show
- Scelorology
- Lymphatic rosary
- Injuries and surgeries
- Psora spot, scurf rim
- Radii Solaris
- Sympathetic nerve wreath
- Closed and open lesions
- Sodium ring
- Circulatory indicators
- Heterochromia
- Lacunae
- Toxic settlements
- Miasmic iris
- Pupilology
- Drugs and chemicals appearance in the iris and their effect on the body

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

Unit 4: Stool and Urine analysis (5 Hours)

- Characteristics of normal stool and urine
- Abnormal characteristics and significance
- Moothra pareeksha and mala pareeksha

Unit 5: Skin Diagnosis (5 Hours)

- Anatomy of skin,skin types
- Abnormality and its significance in Health
- Nail diagnosis, Hair diagnosis in relation with naturopathy and other system of medicine
- Comparison of skin diagnosis with twakpareeksha in *Ayurveda*

Unit 6: Tongue diagnosis **(2 Hours)**

Unit 7: Pulse diagnosis **(4 Hours)**

Unit 8: Chromo diagnosis **(2 Hours)**

Unit 9: Sound and odour diagnosis **(2 Hours)**

Unit10: Advanced research updates **(5 Hours)**

PRACTICAL

1. Case sheet writing - minimum 25 cases with naturopathic diagnostic methods **(25 hours)**
2. Regular hospital visit **(35 hours)**
3. Dissertation of at least 20 cases studies with significant and relevant naturopathic diagnostic modalities **(40 hours)**

Reference Books:

1. Macfaddans Encyclopedia of Physical Culture - Bernard McFadden
2. *Asthangahridyam*
3. *Charka samhitha*
4. *Susrutha samhitha*
5. The Science of Facial Expression – Louis Kuhne
6. Iridology - Dr. Bernard Jenson

Subject title*:* MODERN DIAGNOSIS

Subject Code:

Modern Diagnosis Theory Paper: BNYS306 T

Modern Diagnosis Practical: BNYS306 P

Total Number of Hours:250		**Theory:** 150		**Practical:** 100
SCHEME OF EXAMINATION				
Total Marks: 200				
Theory: 130			**Practical: 70**	
Final Theory Exam	**Internal Assessment**	**Viva Voce**	**Final Practical Exam**	**Internal Assessment**
80	20	30	60	10

Goals:

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

Objectives:

Knowledge:

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

- Understand the procedures and nuances in approaching a patient and taking a detailed history and writing a case report;
- Illustrate examination procedures and techniques generally as well as for specific systems and make provisional diagnoses of common diseases;
- Describe laboratory investigations used for supporting the provisional diagnosis made after history taking and examinations;
- Prescribe and interpret radiological investigations, biochemical investigations, sonography, EEG, ECG, EMG, echocardiography, CT, PET, MRI, etc for diagnostic and prognostic purposes;
- Explain and demonstrate knowledge of invasive tests such as paracentesis, thoracocentesis, lumbar puncture, laparoscopy, endoscopy, biopsy, etc.

Skills:

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

- Effectively take a case history with examinations and prepare a detailed case report;
- Prescribe and interpret any further investigations required for the provisional diagnosis made.

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.

THEORY

Unit 1: Examination of the patient **(40 hours)**

i. Approach to a patient
ii. History taking and case sheet writing
iii. Symptomatology
iv. Examination of vital data
v. Importance of height, weight, abdominal girth
vi. General physical examination
vii. Examination of skin, nail and hair

Unit 2: Systemic examination of the patient **(70 hours)**

i. Examination of Abdomen (digestive system)
ii. Examination of Cardiovascular system
iii. Examination of Respiratory system
iv. Examination of Renal and urogenital system
v. Examination of Central nervous system
vi. Examination of Locomotor system
vii. Examination of ear, nose and throat
viii. Gynecological examination
ix. Endocrine system and metabolic disorder
x. Examination of the eye
xi. Provisional diagnosis

Unit 3: Routine and special investigations **(30 hours)**

i. 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.
ii. ii.Radiological investigations: Plain X-ray chest, K.U.B., lumbar and cervical spine, skull and paranasal sinuses, joints
iii. Contrast Radiology: Barium swallow, barium meal, barium enema; cholecystography, myelography, angiography, bronchogram, myelogram
iv. Electrocardiography, Echo-cardiograph, Coronary angiography, Electro-encephalography
v. 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
vi. Diagnostic Paracentesis, Diagnostic Thoracocentesis, Lumbar puncture and CSF analysis, Diagnostic skin tests, Endoscopic procedures
vii. Radioactive iodine uptake studies, Ultra-sonography
viii. Thyroid T3, T4, TSH estimation
ix. CT, PET, MRI, Doppler & Tissue biopsy and FNAC

Unit- 4: Final Diagnosis **(10 Marks)**

PRACTICAL **(100 Hours)**

1. History taking and physical examination of cases.
2. Case sheet writing of different types of cases (25)
3. Demonstration of equipment and instruments used for investigation in modern diagnostics
4. Demonstration tour of an ultra-modern super-specialty hospital to view the latest technique of modern diagnosis

Textbooks

1. Hutchison‘s Clinical Methods
2. Manual of clinical Methods – PS Shankar
3. Clinical Diagnosis – JalVakil
4. Clinical Methods – Chamberlin
5. Physical Diagnosis – Golwala
6. Harrison‘s Principles of Internal Medicine
7. Manipal Manual of Clinical Medicine
8. Macleod‘s Clinical Examination
9. Davidson‘s Principles and Practice of Medicine
10. Essentials in Hematology and Clinical Pathology

Subject title*:* PSYCHOLOGY & BASIC PSYCHIATRY

Subject Code*:* BNYS T306 & BNYS P 306

Total Number of Hours:150	**Theory:** 100	**Practical:** 50
Credits		
Hours/week		

SCHEME OF EXAMINATION

Total Marks: 200

Theory: 130			**Practical: 70**	
Final Theory Exam	**Internal Assessment**	**Viva Voce**	**Final Practical Exam**	**Internal Assessment**
80	20	30	60	10

Goals and Objectives

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.

Objectives:

Knowledge:

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

- Describe the evolution of Psychology from speculation to science;
- Illustrate mechanisms of sense and perception, states of consciousness and their functions;
- Understand basic and complex functions such as learning, memory, thinking, language, motivation, emotion, intelligence, development of psychology across the lifespan, personality, stress coping, social psychology, attitudes, etc.
- Explain abnormal psychology and describe etiology and psychopathology along with classification of disorders;
- Demonstrate knowledge of therapies aimed at psychological health, such as psychotherapy, *Yoga*, etc;

Skills:

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

- Utilize knowledge of psychology and psychiatry in diagnosing and managing various psychological disorders, assessing psychological profile;
- Demonstrate usage of various therapeutic tools in psychiatry to improve mental health in professional practice.

Integration:

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

THEORY

Psychology

Unit 1: The Evolution of Psychology- How psychology developed from speculation to science **(6 hours)**

i. Studying the mind and behavior
ii. Early scientific approaches to psychology
    a. Structuralism
    b. Functionalism
iii. Contemporary approaches to psychology
iv. Behavioral, Psychodynamic, Cognitive, Behavioral neuroscience, Evolutionary & Sociocultural approach
v. Positive approach to psychology: Humanistic movement and the positive psychology movement

Unit 2: Sensation and Perception **(6 hours)**

i. How we sense and perceive the world
   The visual system, auditory system, other senses.
ii. States of consciousness
   Levels of awareness & Sleep and dreams
iii. Altered states of consciousness
   Hypnosis, Meditation, Drug-induced states.

Unit 3: Learning and Memory **(15 hours)**

i. Types of learning
   a. 1 Classical conditioning
   b. Operant conditioning
   c. Observational learning
   d. Cognitive factors in learning
ii. Memory
   a. Nature of memory
   b. Memory encoding: getting information into memory – the role of attention
   c. Levels of processing
   d. Enriching encoding
   e. Memory storage
      1. Sensory memory
      2. Short-term memory
      3. Long-term memory
   f. Memory retrieval
      1. Serial position effect
      2. Retrieval cues and the retrieval task
      3. Retrieval of autobiographical memories & emotional memories
      4. Forgetting
   g. Biochemistry, Neural circuitry & Anatomy of memory
   h. Are there multiple memory systems? Implicit versus explicit memory
   i. Declarative versus procedural memory & Semantic versus episodic memory

Unit 4: Thinking and Language **(4 hours)**

i. The cognitive revolution in psychology
ii. Concept formation
iii. Problem solving
iv. Critical thinking
v. Reasoning and decision-making
vi. Language and thought language acquisition and development

Unit 5: Motivation and Emotion **(6 hours)**

i. Approaches to motivation

   Evolutionary approach, Drive reduction theory, Optimum arousal theory, cognitive approach

ii. Biological motivation

   - The biology of hunger and thirst
   - Environmental factors in the regulation of hunger, Eating and Weight
   - Sexuality - the biology of sex and the human sexual response: cognitive and sensory/perceptual factors & Cultural factors.
   - Psychosexual dysfunctions, Sexual behavior and orientation

iii. Psychological motivation
iv. Frustration and Conflict
v. Aggression
vi. Theories of emotion
vii. Emotional intelligence

Unit 6: Intelligence **(5 hours)**

i. Nature of intelligence, Intelligence testing, Neuroscience and Intelligence
ii. Neuroscience and intelligence
iii. Theories of multiple bits of intelligence
iv. The extremes of intelligence and creativity, influence of heredity and environment

Unit 7: Human development across the lifespan **(5 hours)**

i. Exploring human development, Prenatal development
ii. Child development: physical, cognitive and socio-emotional development in childhood
iii. Adolescence positive psychology and adolescents: Physical, cognitive and socio emotional development in adolescence
iv. Adult development and aging: Physical, cognitive and socio emotional development in adulthood

Unit 8: Personality **(8 hours)**

i. The nature of personality
ii. Psychodynamic perspectives
iii. Behavioral perspectives
iv. Humanistic perspectives
v. Biological perspectives and contemporary empirical approaches to personality

Unit 9: Stress coping and health **(6 hours)**

i. The nature of stress, Major type of stress and responding to stress
ii. The effects of stress on psychological functioning & on physical health.
iii. Factors moderating the impact of stress
iv. Health-impairing lifestyles, Reactions to illness & Improving coping and stress management

Unit 10: Social Psychology **(2 hours)**

i. Social thinking
   a) Attribution
   b) Social perception
   c) Attitudes
ii. Social influences
   a) Conformity and obedience
   b) Group influence
   c) Leadership
iii. Inter group relations
   a) Group identity
   b) Prejudice
   c) Ways to improve interethnic relations
iv. Social interaction
   a) Aggression
v. Relationships
   a) Attraction
   b) Love
   c) Relationships and gender

ABNORMAL PSYCHOLOGY: PSYCHIATRY

Unit 1: Abnormal behavior in historical context- the science of psychopathology **(2 hours)**

i. The historical conceptions of abnormal behavior
ii. The supernatural, biological and psychological tradition
iii. An integrative approach to psychopathology
iv. One-dimensional and multidimensional models
v. Genetic contributions to psychopathology neuroscience and its contributions to psychopathology
vi. Behavioral and cognitive science, Cultural, social and interpersonal factors
vii. Classification of psychological disorders: DSM-IV and ICD 10 classifications

Unit 2: Anxiety disorders **(6 hours)**

i. Generalized anxiety disorders
ii. Panic disorders; phobias
iii. Obsessive-compulsive disorders

Unit 3: Somatoform and Dissociative disorders **(6 hours)**

i. Hypochondriasis
ii. Somatization disorder
iii. Conversion disorder
iv. Pain disorder
v. Dissociative disorders

Unit 4: Mood disorders **(4 hours)**

i. Depressive disorders
ii. Bipolar disorders
iii. Suicide

Unit 5: Substance-related disorders **(4 hours)**

i. Depressants
Alcohol use, Sedative substance use, Hypnotic substance use, Anxiolytic substance use disorders
ii. Stimulants
Amphetamine, Cocaine, Nicotine, Caffeine, Opioids use disorders
iii. Hallucinogens
Marijuana, LSD, Other Hallucinogens & other drugs of abuse.

Unit 6: Schizophrenia and other psychotic disorders **(8 hours)**

i. Schizophrenia
    a. Clinical description
    b. Causes
    c. Types and treatment
ii. Personality disorders – cluster A, B, and C
iii. Psychotherapies
    a. Psychodynamic therapies
    b. Behavioral therapies
    c. Humanistic therapies

Unit 7: Mental health and Yoga, Yogic Counselling **(4 Hours)**

Unit 8: Principles and techniques of counselling **(3 Hours)**

i. Qualities of a counselor
ii. Role of catharsis as understood by modern psychology and counselling

iii. Yoga techniques to be used during counselling to cope with hypersensitive mind, excessive speed of mind, congenital and hereditary and congenital problems, psychological conflicts, calamities/ life events.

Practical

1. Case sheet writing of different types of psychiatric cases (20).

References:

2. Saundra K Ciccarelli, Girishwar Misra, J Noland white, Psychology, 7th edition, Pearson Education India

3. Ahuja Niraj, A Short textbook on Psychiatry, 20th edition, Jaypee Brothers Medical Publishers
4. Weiten, Wayne (1995) themes, and variations 3rd edition, New York Brooks/Cole, Publishing company
5. Santrock, J.W. (2005) Psychology, 7th edition, New York, McGraw-Hill publications
6. Barlow, D.H. and Durand, V.M. (2002) Abnormal Psychology, 3rd edition, United States, Wadsworth Thomson Learning

Fourth Year Syllabus (12 months)

Subject title: FASTING THERAPY AND DIETETICS (Duration 12 months)
Subject Code:
Fasting therapy and Dietetics Theory Paper: BNYS 401 T
Fasting therapy and Dietetics Practical: BNYS 401 P

Total Number of Hours: 250		**Theory:** 150	**Practical:** 100	
SCHEME OF EXAMINATION				
Total Marks: 200				
Theory: 130			**Practical: 70**	
Final Theory Exam	**Internal Assessment**	**Viva Voce**	**Final Practical Exam**	**Internal Assessment**
80	20	30	60	10

Goals and Objectives

Goals:

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.

Objectives:

Knowledge:

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

- Describe definitions and historical highlights of fasting therapy through the centuries, including fasting employed in different religions;
- Classify fasting according to duration, purpose, type, etc;
- Define rules and regulations of fasting to be followed;
- Understand the metabolism of fasting;
- Understand contraindications and indications of fasting in order to efficiently use fasting as a therapy;
- Understanding Calorie Restriction: Concept, Method, Prevailing basic- clinical applied evidence
- Understand the concept of dietetic principles in Naturopathy;
- Understand food combinations and health, including dietary requirements for different age groups, including pregnant and lactating women;
- Describe importance of various components of diet, such as dietary fiber, vitamins, minerals, etc;
- Explain auxiliary concepts of dietetics such as food hygiene, etc.

Skills:

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

- Utilize knowledge of fasting therapy and dietetics in managing various diseases;
- Demonstrate usage of therapeutic diets and fasting therapy in promotive, preventive, curative and rehabilitative therapy.

Integration:

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

THEORY

Unit-1: Fasting (50 Hrs)

1. Definition
2. Historical highlights
   a. Indian: According to Vedas, Ayurveda, Epics and other pioneer in Naturopathy
   b. Western
3. Evidence of fasting in animals and its benefits
4. Fasting in different religions
5. Classification of fasting and its effects, limitations, according to
   a. Duration (Short, long, intermittent, intermediate)
   b. Purpose (Preventive, therapeutic, religious, political)
   c. Type (Dry, water, juice, mono-diet, saline water fasting)x
6. Metabolism of fasting
   - Changes in carbohydrate metabolism
   - Changes in amino acid metabolism
   - Changes in lipid metabolism
   - Autophagy
7. Starvation –pathological features in different organ systems
8. Physiological changes and benefits of short, long, intermittent fasting on different systems (hormones, digestive enzymes, liver, muscles, blood, brain, kidneys, heart, electrolytes, immune system, GIT & gut, on appetite)
9. Physiology of hunger
10. Difference between hunger and appetite
11. Rules and regulations for administering fasting (Rules and regulations for selection of patient for fasting and Hygiene and auxiliaries of fasting)
12. Do's and don'ts of fasting
13. Sane fasting
14. Psychological effects and barriers for fasting
15. Crises during fasting therapy and its management
16. Significance of enema and water drinking during fasting and its physiology
17. Fasting in acute and chronic diseases
18. Contraindications and limitations of fasting
19. Circadian rhythm and fasting
20. Fasting and nutrigenomics/ epigenetics

21. Fasting and healing (wound healing)
22. Research updates on fasting

Unit-2: <u>Dietetics & philosophy of naturopathic & yogic diet:</u> (50 hrs)

1. Philosophy & history of naturopathic diet
    - Concept of panchamahabhoota and food
2. Philosophy & history of yogic diet
3. Food according to Ayurveda
4. Seasonal changes of food
5. Different Methods of cooking (& sprouting)
    - Methods to preserve nutrients while cooking
6. Difference between raw and cooked food
7. Wrong food combination
8. Food hygiene
9. Customs and tradition of eating
10. Benefits & therapeutic uses of common fruits & vegetables used in India
11. Different types of diets like vegan, paleo diet etc
12. Diet prescription – Menu planning & modification of normal diet
13. Naturopathic hospital diet
14. Comparison of modern nutrition & naturopathic diet

Unit -3: Dietary management & fasting for different diseases (evidence based):(50 hrs)

1. Infections
2. Cardiovascular disorders- CHD, PAD, Rheumatic heart disease, hypertension, post-CABG, atherosclerosis, Stroke
3. Respiratory disorders – COPD, allergic rhinitis, sinusitis
4. Disorders of liver- fatty liver, liver cirrhosis, chronic alcoholism
5. Pancreatic disorders- Diabetes mellitus, chronic pancreatitis
6. Metabolic disorders- obesity, dyslipidemia, cholelithiasis
7. Nutritional disorders- Anemia, underweight, inborn errors of metabolism, food allergy

8. Prevention & treatment of Cancers
    - Types of cancer
    - Carcinogens in food
    - Importance of functional foods in cancer prevention
    - Role of diet during chemotherapy, radiotherapy and palliative care
9. Rheumatic disorders – RA, Gout, Lupus, Scleroderma, OA, Ankylosing spondylitis, psoriatic arthritis
10. Dermatological disorders – psoriasis, dermatitis, eczema, uticaria, acne vulgaris
11. Endocrine disorders- PCOS, Hypothyroidism
12. Autoimmune disorders- multiple sclerosis, Sjogren syndrome, reactive arthritis, IBD
13. GIT disorders- Gastritis, IBS, GERD, PUD, hemorrhoids, diverticulitis, intolerances (lactose, gluten), infectious diarrhea, celiac disease
14. Renal system – renal calculi, UTI, CKD

PRACTICAL

vi. Visits to different diet departments of naturopathy and modern medicine hospitals (10 Hrs)

vii. Menu planning using natural foods and raw diet in general (20 Hrs)

viii. Demonstration of different sprouts (5 Hrs)

ix. Preparationoflowcostbalanceddietfordifferentpopulationgroupsusingnatural foods (20 Hrs)

x. Canteen duties at different naturopathy hospitals (5 Hrs)

xi. Visit to different nutrition centers like CFTRI, Mysore, NIN, Hyderabad etc. (10 Hrs)

xii. Study of 20 fasting cases (20 Hrs)

xiii. Case studies of 10 with records (10 Hrs)

Textbooks

1. Fasting for Healthy and Long Life– Carrington
2. Fasting Cure –Lakshman Sharma
3. Fasting-The Ultimate Diet-Allan Cott
4. Mucusless Diet Healing System-Arnold Ehret
5. The Fasting Cure (Classic Reprint)-Upton Sinclair

6. Fasting Can Save Your Life -Herbert M. Shelton
7. Davidson and Passamore Human Nutrition– Passamore
8. Clinical Dietetics and Nutrition – FPAntia
9. Normal Therapeutic Nutrition– Corinne Robinson
10. Essentials of Food and Nutrition – Swaminathan
11. Sprouts– JD Vaish *Yoga* Samsthan
12. Science and Art of Food and Nutrition – Herbert Shelton
13. Nutritive Values of Indian Foods – NIN(Hyd)
14. Publications of NIN, Hyderabad
15. Krause's food & nutrition therapy- L Kathleen Mahan
16. Krause's food & nutrition care process - L Kathleen Mahan

Subject title: OBSTETRICS AND GYNECOLOGY (Duration 12 months)
Subject Code:
Obstetrics and Gynecology Theory Paper: BNYS402 T
Obstetrics and Gynecology Practical: BNYS402 P

Total Number of Hours: 250		**Theory:** 150	**Practical:** 100	
SCHEME OF EXAMINATION				
Total Marks: 200				
Theory: 130			**Practical: 70**	
Final Theory Exam	**Internal Assessment**	**Viva Voce**	**Final Practical Exam**	**Internal Assessment**
80	20	30	60	10

Goals and Objectives

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.

Objectives

Knowledge:

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

- Delineate the anatomy, physiology and pathophysiology of the reproductive system and the common conditions affecting it;
- Detect normal pregnancy, labor, and puerperium;
- Elucidate the leading causes of maternal and perinatal morbidity and mortality;
- Understand the principles of contraception and various methods employed, methods of medical termination of pregnancy, sterilization and their complications;
- Recognize the use, abuse and side effects of drugs in pregnancy, pre-menopausal and post-menopausal periods;
- Explain the National Programs of Maternal and Child Health and Family Welfare and their implementation;
- Assess different gynecological diseases and describe principles of their management;
- 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).

Skills:

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

- Examine a pregnant woman, recognize high risk pregnancies and make appropriate referrals; and perform pelvic examination, diagnose common gynecological problems including early detection of malignancies:
- Recognize complications of delivery and provide postnatal care; and Recognize congenital anomalies of newborn;
- Advise a couple on the use of various available contraceptive devices;
- Interpret data of investigations like biochemical, histopathological, radiological, ultrasound etc.

Integration:

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

THEORY

Unit-1: Obstetrics - Anatomy and Physiology (30 Hrs)

i. Basic Anatomy and Physiology
   a. Anatomy and Physiology of female reproductive organs and pelvis
   b. Maturation and fertilization of ovum
   c. Development of placenta
   d. Embryology of uterus

ii. Physiology of pregnancy
   a. Maternal changes due to pregnancy
   b. Diagnosis of pregnancy
   c. Differential diagnosis of pregnancy
   d. Fetus in normal pregnancy
   e. Antenatal care

iii. Physiology of labor
   a. Causation and stages of labor
   b. Mechanism of labor
   c. Conduct of normal labor

iv. Physiology puerperium
   a. Phenomena of normal puerperium
   b. Care of puerperium
   c. Breastfeeding and care of breast
   d. Care of new born child

Unit-2: Pathology (35 Hrs)

i. Pathology of pregnancy
   a. Hyperemesis Gravidarum
   b. Venereal diseases
   c. Anemia in pregnancy
   d. Diseases of the urinary system
   e. Diabetes in pregnancy
   f. Diseases and abnormalities of fetal membranes and placenta
   g. Abortion
   h. Ectopic pregnancy
   i. Ante-partum hemorrhage
   j. Placenta Previa
   k. Abruption placenta

ii. Pathology of labor
   a. Occipito-posterior position
   b. Breech presentation
   c. Prolapse of the cord, compound presentation
   d. Multiple pregnancy
   e. Contracted pelvis
   f. Management of labor in contracted pelvis
   g. Complications of 3rd stage of labor

iii. Affection of new-born
   a. Asphyxia Neonatorum
   b. Pre-term baby
   c. Congenital malformations

iv. Obstetrical operations
   a. Forceps

b. Caesarean section
c. Induction of abortion and labor

v. Pathology of Puerperium – Puerperal infections

Unit-3: Miscellaneous **(10 Hrs)**

a. Perinatal mortality and maternal mortality
b. Post-dated pregnancy
c. Placenta insufficiency
d. Control of contraception
e. Medical termination of pregnancy
f. Pre-term labor
g. Ultrasonography in Obstetrics

Unit-4: Applied aspects in Obstetrics **(10 Hrs)**

a. *Yoga* and Naturopathy for Healthy parenthood
b. Antenatal and postnatal care through *Yogic* methods
c. Antenatal and postnatal care through Naturopathic modalities
d. Antenatal and postnatal care through general exercises
e. Antenatal and postnatal care through Hydrotherapy
f. Natural diet during pregnancy and lactation.

Unit-5: Gynecology - Anatomy and Physiology **(5 Hrs)**

i. Anatomy of the female pelvic organs
a. External genitalia
b. Internal genitalia
c. Female urethra
d. Urinary bladder
e. Ureter
f. Rectum and Anal canal
g. Pelvic muscles
h. Pelvic fascia and cellular tissue

ii. Blood vessels, lymphatic drainage and innervations of pelvic organs
a. Pelvic blood vessels, lymphatics and nerves

Unit-6: Menstruation and Menopause **(5 Hrs)**

i. Puberty and Menopause
ii. Neuroendocrinology in relation to reproduction
iii. Menstruation

Unit-7: Examination of a gynecological patient and the diagnostic aids **(5 Hrs)**

a. History and examination
b. Ancillary aids
c. Cytology
d. Colonoscopy

Unit-8: Pathology **(20 Hrs)**

i. Pelvic infection
a. Defense of the genital tract
b. Acute pelvic infection
c. Chronic Pelvic Infection
d. Genital tuberculosis

ii. Sexually transmitted diseases

iii. Infections of the individual pelvic organs
a. Vulva
b. Bartholin's gland
c. Vagina
d. Cervix
e. Endometrium
f. Fallopian tubes
g. Ovary
h. Parametrium

iv. Dysmenorrhea and other disorders of menstrual cycles
   a. Dysmenorrhea
   b. Dysfunctional uterine bleeding
v. Displacement of the uterus
   a. Retroversion
   c. Chronic inversion
   b. Prolapse
vi. Infertility
   a. Causes
   d. Assisted reproductive techniques
   b. Investigations
   e. Counseling techniques
   c. Treatment
vii. Benign lesions of the vulva and vagina
   a. Vulval epithelial disorders and ulcers
   b. Vulval and vaginal cysts
viii. Benign lesions of the cervix
ix. Benign lesions of the uterus
   a. Fibroids
   b. Polyps
x. Benign lesions of the ovary
xi. Ovarian neoplasm
xii. Endometriosis and adenomyosis
xiii. Premalignant lesions
   a. Vulva
   c. Cervix
   b. Vagina
   d. Endometrium
xiv. Genital malignancy
   a. Cervical
   c. Gestational trophoblastic neoplasia
   b. Endometrial
   d. Ovarian
xv. Urinary problems in gynecology
   a. Anatomy of the urethra-vesical unit
   b. Genuine stress incontinence
   d. Retention of urine
   c. Overflow incontinence
   e. Urinary tract infections
xvi. Genital fistulae
   a. Genito-urinary
   b. Recto-vaginal
xvii. Amenorrhea
   a. Physiological
   b. Primary and Secondary

Unit-9: Contraception, Special problems and Operative gynecology (20 Hrs)

i.Contraception
   a. Barrier methods
   d. Steroidal
   b. Natural
   e. Emergency
   c. IUCD
   f. Sterilization
ii. Special problems
   a. Abnormal vaginal discharge
   f. Breast in gynecology
   b. Pruritis vulvae
   g. Vaginismus
   c. Pelvic pain
   h. Dyspareunia
   d. Postmenopausal bleeding
   i. Hirsutism
   e. Low backache
   j. Galactorrhea
viii. Operative gynecology
   a. Postoperative care
   g. Cryosurgery
   b. Dilation of cervix
   h. Perineoplasty
   c. Dilation and curettage
   i. Amputation of cervix
   d. Dilation of and insufflation
   j. Abdominal hysterectomy
   e. Hystero-salpingography
   k. Vaginal hysterectomy

f. Cervical biopsy

ix. Endoscopic surgery in gynecology

a. Laparoscopy

b. Hysteroscopy

Unit-10: Applied aspects of gynecology **(10 Hrs)**

a. Role of Naturopathy and *Yoga* in Gynecology
b. Water treatments for gynecological disorders.
c. Natural birthing
d. Underwater birthing

PRACTICAL

1. History taking of antenatal and gynecological cases **(5 Hrs)**
2. Demonstration of physical examination of antenatal and postnatal gynecological cases **(25 Hrs)**
3. Demonstration of conductive labor, normal delivery and use of minor instruments during delivery. **(20 Hrs)**
4. Demonstrations of instruments like Sim‘s speculum, Cusco‘s bivalve self-training vaginal speculum, Cervical dilators, Anterior vaginal wall retractor, Uterine curette **(20 Hrs)**
5. Specimens
6. X ray, US, and CT plates **(5 Hrs)**
7. Case-history writing of antenatal and gynecological cases **(5 Hrs)**
8. Demonstration of underwater delivery and painless delivery using acupuncture desired. **(20 Hrs)**

Textbooks

1. Clinical Obstetrics – Mudaliar and Menon
2. Textbook of Obstetrics and Gynecology – CS Dawn
3. Shaw’s Gynecology
4. Textbook of Obstetrics and Gynecology – Dutta.

Subject title: YOGA THERAPY (Duration 12 months)
Subject Code:
Yoga Therapy Theory Paper: BNYS403 T
Yoga Therapy Practical: BNYS403 P

Total Number of Hours: 225		**Theory:** 125	**Practical:** 100	
SCHEME OF EXAMINATION				
Total Marks: 200				
Theory: 130			**Practical: 70**	
Final Theory Exam	**Internal Assessment**	**Viva Voce**	**Final Practical Exam**	**Internal Assessment**
80	20	30	60	10

Goals:

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

Objectives

Knowledge:

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

- Describe the physiological effects of various *yogic* practices like *kriyas*, *asanas*, *pranayama*, *mudras*, *bandhas*, *drishtis*; guided relaxation and Meditation;
- Define rules and regulations of *Yoga* to be followed;
- Understand the therapeutic aspects of *Yoga* as applied to different disease conditions;
- Understand contraindications and indications of *yogic* practices in order to efficiently use *Yoga* as a therapy
- Understand the concept of health and disease in *yogic* lore and role of stress in disease causation and management of the same with *Yoga*;
- Understand importance of food according to *Yoga*;
- Delineate the importance of *Yoga* and mental health;

Skills:

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

- Utilise knowledge of *Yoga* therapy in managing various diseases;
- Demonstrate usage of therapeutic aspect of *Yoga* in promotive, preventive, curative and rehabilitative therapy.
- Institute remedial measures in *Yoga* for various disease conditions.

Integration:

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

THEORY

Unit-1: Introduction to *Yogic* Therapy / Basis of *yogic* Therapy **(10 Hrs)**

a. Concept of Yoga therapy from Yoga Vasishta

Unit-2: Therapeutic effect of Yoga **(30 Hrs)**

i. Role of *Asanas* in curing various diseases
ii. Specific importance of *Pranayama* in curing various diseases
iii. Vital role of *Bandhas, Mudras, Drishtis*, in curing various diseases
iv. Role of *Shat kriyas* in curing various diseases
v. Role of general exercises in health and diseases

Unit-3: Scientific Evidences on Yoga therapy **(40 Hrs)**

i. Cardiovascular diseases
ii. Psychiatric disorders
iii. Musculoskeletal disorders
iv. Nervous system disorders
v. Gastrointestinal disorders
vi. Hormonal diseases
vii. Respiratory diseases
viii. Metabolic diseases
ix. Ophthalmologic disorders
x. Pediatric disorders
xi. OBG related disorders

Unit- 4: Subtle Energy Medicine **(10 Hrs)**

i. PET
ii. Mudra Therapy
iii. Reiki
iv. Pranic Healing

Unit- 5: Yoga in Rehabilitation and Palliative Care **(10 Hrs)**

Unit-6: Yoga as a therapy **(15 Hrs)**

i. Yogic Analysis of a disease
ii. Yogic Prescription
iii. Yoga therapy as a basis for Integrative Medicine
iv. Yoga and Mind-body Medicine

Unit-7: Lesson planning and teaching methods in *Yoga* **(10Hrs)**

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

PRACTICAL **(100 Hrs)**

1. LSP
2. QRT, IRT, DRT
3. CM, TM
4. SKY
5. SMET
6. PET, MSRT, MIRT, MEMT, VISAK, ANAMS
7. Therapeutic Yoga

Reference books:

1. *Yogic* Therapy – Vinekar
2. *Yogic* Therapy – Garde
3. Treatment of Common Diseases through *Yoga* – Swami Satyananda Saraswati
4. Seminar on *Yoga*, Science and Man – CCRYN, Delhi
5. *Yoga* for Healing – PS Venkateswaran
6. Handbook of Behavior Modification and Therapy – Plenum Press
7. Stress Management Research Papers – VK *Yoga*, Bangalore
8. All Bihar School of *Yoga* publications

Subject title: HYDROTHERAPY AND MUD THERAPY (Duration 12 months)
Subject Code:
Hydrotherapy and Mud Therapy Theory paper: BNYS404 T
Hydrotherapy and Mud Therapy: BNYS404 P

Total Number of Hours: 275		**Theory:** 175	**Practical:** 100	
SCHEME OF EXAMINATION				
Total Marks: 200				
Theory: 130			**Practical: 70**	
Final Theory Exam	**Internal Assessment**	**Viva Voce**	**Final Practical Exam**	**Internal Assessment**
80	20	30	60	10

Goals:

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

Objectives

Knowledge:

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

- 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.
- Illustrate physiological effects of hot and cold water upon the different systems of the body and applications to reflex areas**;**
- Explain action and reaction mechanisms and physiology, with their effects and uses
- Demonstrate use of water in preservation, acute diseases, chronic diseases
- 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
- Demonstrate techniques and procedures of various types of hydriatic applications

Skills:

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

- Utilize knowledge of hydrotherapy and mud therapy in managing various diseases;
- Demonstrate usage of therapeutic aspect of hydrotherapy and mud therapy treatments in promotive, preventive, curative and rehabilitative therapy.
- Institute and evaluate remedial measures in hydrotherapy for various disease conditions in clinical as well as research settings.

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.

THEORY

Unit-1: Basics of Hydrotherapy: (33 Hrs)

a. Introduction and History.
b. Physical properties and chemical composition of water.
c. Importance of water to the human body.
d. The skin and its anatomical construction and its functions.
e. 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.

Unit-2: Physiological effects of water on different systems of the body (26 Hrs)

a. General and physiological aspects of heat upon: Skin, Respiration, Circulation, Nervous system and Reflex areas. Heat and its production-dissipation etc, Tactile and temperature sense
b. General and physiological effects of cold upon: Skin, Respiration, Circulation, Nervous system, GIT, body temperature and its maintenance, circulatory system and Reflex areas..

Unit-3: Actions and reaction, incomplete reaction, conditions that encourage reaction, internal reaction, thermic reaction, modified thermic reaction (8 Hrs)

Unit-4: **Therapeutic effects of water: (9 Hrs)**

a. Place of water in preservation.
b. Place of water in acute diseases
c. Place of water in chronic diseases
d. Magnesium sulphate – use in Hydrotherapy

Unit-5: **General principles of Hydrotherapy (6 Hrs)**

a. General rules of hydrotherapy
b. Therapeutic significance of reaction
c. Adaptation of individual cases
d. Exaggeration of symptoms under treatment, the untoward effects and how to avoid them
e. General indications and contra-indications

Unit-6: Therapeutic actions and use of Hydrotherapy (23 Hrs)

a. Classification of Hydriatic effects, general principles – excitation and depression
b. Primary excitant effects – when to apply and when not to apply
   i. Local hemostatic effects – hydriatic heart tonics
   ii. Cardiac effects – Hydriatic heart tonics
   iii. Uterine excitations, emanegogic effects
   iv. Vesical excitations
   v. Intestinal excitation, peristaltic effects
c. Secondary excitant effects
   i. Restorative effects
   ii. 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
   iii. Calorific effects
   iv. Diaphoretic effects

v. 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
vi. Expectorant effects
vii. Diuretic effects – Bright‘s Disease, Uremia – eclampsia
viii. Atomic dyspepsia, hyperacidity
ix. 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
x. Resolvent effects

d. Sedative effects – general sedatives – local sedatives:

- Sedatives of circulatory system – antiphlogistic effects, inflammation, pneumonia, pleurisy, other acute disorders
- Nerve sedatives, hypnotic, calmative, analgesic, anesthetic, antispasmodic, insomnia, chorea, spastic paralysis, exophthalmia, goiter, mania, epilepsy and various painful conditions
- Anti-thermic 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
- 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

Unit-7: **The Techniques of Hydrotherapy** **(46 Hrs)**

i. Water Baths
   a. Plain water bath
   b. Cold hip bath
   c. Kellog‘s and Kuhne‘s sitz bath
   d. Shallow bath – for males and females
   e. Arm and foot bath
   f. Graduated bath
   g. Natural bath
   h. Non-revulsive bath
   i. Immersion bath
   j. Cold plunge
   k. Whirlpool bath
   l. Aeration bath
   m. Vichy spray massage
   n. Rapid bath
   o. Brand bath
   p. Fever bath
   q. River bathing
   r. Sea bathing

ii. Various baths and air baths
   a. Russian bath
   b. Turkish bath
   c. Steam bath
   d. Local steam bath
   e. Steam inhalation
   f. Hot air bath
   g. Local hot air bath
   h. Super-hot air bath
   i. Cold air bath
   j. Indoor and outdoor bath

iii. Pool therapy
   a. Introduction
   b. Principles of treatment part I and part II
   c. Physiological and therapeutic effects of exercise in warm water
   d. Indications and contraindications
   e. Dangers and precautions

iv. Douches
   a. Cold Douche
   j. Fan Douche

b. Hot Douche
c. Neutral Douche
d. Alternative Douche
e. Underwater Douche
f. Contrast Douche
g. Horizontal Jet
h. Cephalic Douche
i. Circular Douche and semi-circular Douche
k. Rain or Shower Douche
l. Hepatic Douche
m. Lumbar Douche
n. Cerebrospinal Douche
o. Plantar Douche
p. Percussion Douche
q. Scotch Douche

v. Packs and compresses
vi. Procedures that increase oxidation
vii. Measures that encourage general and local metabolic activity
viii. Procedures that increase general blood movement and local blood supply
ix. Measures that increase heat production
x. Measures that increase the elimination of heat
xi. Measures that combat bacterial development of blood
xii. Measures that increase/lessen heat elimination
xiii. Hydriatic incompatibility
xiv. Adoption of hydriatic prescription of individual disease
xv. Hydrotherapy as a means of rehabilitation and health promotion
xvi. Emergency treatments in Hydrotherapy

Unit-8: Mud Therapy **(24 Hrs)**

i. Introduction to Mud therapy
ii. Classification of Mud for therapeutic use
iii. Precautions for storing mud
iv. Methods of treatment of mud
a. Applications b. Packing c. Hot poultices
v. Effect of Mud on different systems of body
vi. Types of mud therapy applications
a. Natural mud bath
b. Full and partial mud packs
c. Sand pack and sand baths
d. Mud plaster
e. Thermal bath
f. Dry pack
vii. Cosmetic uses of mud
viii. Research updates

PRACTICAL

1. Demonstration of various therapeutic effects, procedure and treatments in Hydrotherapy during clinical classes at the Hospital **(40 Hrs)**
2. At the end of the Final BNYS course, candidate should be in a position to give treatments independently
3. 5 case documentation of all hydriatic applications **(20 Hrs)**
4. Clinical dissertation on case studies with minimum sample size of 20 patients on one general and two local applications **(40 Hrs)**

Text books:

1. Baths – SJ Singh
2. My Water Cure – Sebastian Kneipp
3. Rational Hydrotherapy – JH Kellogg
4. Healing Clay –Michael Abserra
5. Our Earth Our Cure – Raymond Dextroit

Reference:

1. Handbook of Hydrotherapy – Shew Joel
2. Hydrotherapy in Practice – Davis BC & Harrison RA
3. Medical Hydrology – Sidney Licht

Subject title: PHYSICAL MEDICINE & REHABILITATION (Duration 12 months)
Subject Code:
Physical Medicine and Rehabilitation Theory Paper: BNYS405 T
Physical Medicine and Rehabilitation Practical: BNYS405 P

Total Number of Hours: 250		**Theory:** 150	**Practical:** 100	
SCHEME OF EXAMINATION				
Total Marks: 200				
Theory: 130			**Practical: 70**	
Final Theory Exam	**Internal Assessment**	**Viva Voce**	**Final Practical Exam**	**Internal Assessment**
80	20	30	60	10

Goals:

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

Objectives

Knowledge:

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

- Define principles of basic physics that act as a foundation for physical medicine
- 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;
- 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.

Skills:

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

- Demonstrate usage of therapeutic applications of physical medicine in promotive, preventive, curative and rehabilitative therapy, focusing on rehabilitation.
- Institute remedial measures in *Yoga* for various disease conditions.

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.

THEORY

PART A: EXERCISE THERAPY **(90 Hrs)**

Unit-1: **Introduction to exercise therapy** **(8 Hrs)**

i. Basic Physics in Exercise Therapy
   a. Mechanics: Force, gravity, line of gravity, center of gravity in human body, base, equilibrium, axes and planes
   b. Mechanical Principles: lever, order of lever, examples in human body, pendulum, spring
ii. Starting positions: Fundamental starting positions, derived positions, muscle work for all the fundamental starting positions

Unit-2: **Classification of movements, Relaxation techniques** **(20 Hrs)**

i. Voluntary movements
ii. Involuntary movements
iii. Active movements
iv. Passive movements
v. Joint movement: Classification of joint movements causes 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 joints.
vi. Relaxation: Techniques of relaxation, Principles of obtaining relaxation in various positions

Unit-3: **Neuromuscular facilitation, Muscle strength** **(10 Hrs)**

i. Proprioceptive Neuromuscular facilitation techniques, functional reeducation
ii. 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

Unit-4: **Coordination exercises, Postures, Gait** **(12 Hrs)**

i. Coordination exercises: Definition of coordinated movements, in coordinated movements, Principles of coordinated movements, technique of coordination exercise
ii. Posture: types, factors responsible for good posture, factors for poor development of posture
iii. Gait: Analysis of normal gait with muscles work, various pathological gaits
iv. Crutch gait: introduction, crutch measurement, various types of crutch gait in detail

Unit-5: **Suspension therapy, Therapies in sports medicine** **(10 Hrs)**

i. 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
ii. Myofascial Release Therapy and related therapies used in Sports Medicine

Unit-6: **Therapeutic applications** **(30 Hrs)**

PART B: ELECTROTHERAPY **(60 Hrs)**

Unit-6: Fundamentals of electrotherapy (15 Hrs)

i. Electrical fundamentals
   a. Physical principles
   b. Structure and properties of matter
   c. Molecular atom, proton, neutron, electron, ion etc
ii. Electrical energy
   a. Nature of electricity current
   b. Static electricity
   c. Electric potentials generated by cell
iii. Ohm's Law and Joule's Law
iv. Magnetic energy
   a. Nature and property of a magnet
   b. Magnetic induction
   c. Shaw rule
   d. Maxwell's corkscrew rule
v. Electromagnetic induction
   a. Principle and working of choke
   b. Coil
   c. Transformer
   d. Rectification of AC to DC
   e. Metal oxide rectifier
vi. Semiconductor- Diode and Triode
vii. Valves
viii. Principles of working in a capacitor
   a. Details of charging and discharging etc.
ix. Transistors
x. Measurement of current intensity
xi. EMS and power
xii. Moving coil millimeter and voltmeter
xiii. Low frequency currents
   a. Nature and principles of production of muscles stimulating currents
   b. Types of low frequency currents used for treatment
   c. Therapeutic electric stimulation
   d. Ionotophoresis
   e. Phonophoresis
xiv. Faradic and Galvanic currents

Unit-7: Preparation and treatment techniques (15 Hrs)

xv. Preparation for electrotherapy
   a. Preparation of apparatus
xvi. Patient treatment technique
   a. Stimulating muscles of extremity, back and face through the motor points
xvii. High frequency current treatments
   a. Physics of high frequency currents
   b. Principles
   c. Biophysics of heat physiology and cold.
   d. Production, physiological and therapeutic effects and uses.
   e. Technique of treatment, dangers and precautions, contraindications of: Ultrasonic therapy

Unit-8: Principles of radiation therapy (20 Hrs)

xviii. Physics of radiation therapy
   a. Introduction
   b. Laws governing radiation: Production, physiological and therapeutic effects, uses, techniques of treatment, dangers and precautions, contraindications etc. of: IRR therapy and UV therapy
   c. Basic principles of TENS and IFT

d. Laser Therapy

Unit-9: Wax therapy **(10 Hrs)**

xix. Physics of wax therapy
xx. Physiological and therapeutic effects and uses
xxi. Techniques of application

PRACTICAL ELECTROTHERAPY **(50 Hrs)**

i. Interrupted/modified DC **(20 Hrs)**
a. Stimulation of muscles directly
b. Diagnostic tests:
- FG test
- SD curve
- Fatigue test

c. Uses of surged Faradism and interrupted Galvanism in various peripheral nerve lesions
- Neuropraxia
- Axonotmesis
- Neurotmesis

ii. High Frequency current treatment **(30 Hrs)**
a. 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 tota
b. Ulcers, psoriasis, rickets and general debility patients.
c. Ultrasonics: Setting up of apparatus, selection of dose, and technique of application of various conditions and to various parts of the body.
d. Laser – setting up apparatus including selection of method, technique, preparation of patient, checking contraindications, application for various conditions and parts of the body.

PRACTICAL EXERCISE THERAPY **(50 Hrs)**

i. Demonstration and practice of active and passive movements **(6 Hrs)**
ii. 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. **(8 Hrs)**
iii. Muscle strength: Demonstration and practice of strengthening, reeducation of weak/paralyzed muscles of both upper and lower extremity, individual group muscles, abdominal muscle exercises **(8 Hrs)**
iv. 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. **(6 Hrs)**
v. Demonstration and practice of free exercise to improve joint range of motion (Small joint, Ex: Hand, fingers, toes, etc). Demonstration and practice of all crawling exercises, faulty posture, correcting techniques etc. **(4 Hrs)**
vi. Demonstration of various pathological gaits. **(4 Hrs)**
vii. Measurement of crutches, walking aids, strengthening muscles, crutch balance, demonstration and practice of all crutch gaits. **(4 Hrs)**
viii. Breathing exercises: Demonstration and practice of diaphragmatic breathing, localized expansion exercises. **(4 Hrs)**
ix. 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, tendoachilles, etc. **(6 Hrs)**

Reference Books

1. Principles of Exercise therapy – Dina Gardiner
2. Tidy's Physiotherapy
3. Cash's Textbook of Physiotherapy
4. Clayton's Electrotherapy

Subject title: FIRST AID AND EMERGENCY MEDICINE (Duration 12 months)

Subject Code:

First Aid and Emergency Theory Paper: BNYS406 T

First Aid and Emergency Practical: BNYS406 P

Total Number of Hours: 150		**Theory:** 100	**Practical:** 50	
SCHEME OF EXAMINATION				
Total Marks: 200				
Theory: 130			**Practical: 70**	
Final Theory Exam	**Internal Assessment**	**Viva Voce**	**Final Practical Exam**	**Internal Assessment**
80	20	30	60	10

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.

Objectives:

Knowledge:

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

- Illustrate working knowledge about Golden hour
- Describe quick assessment and recognition of emergency conditions;
- Demonstrate specific first aid measures and emergency treatments used for handling emergency cases before and after diagnosis of the condition;

Skills:

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

- Demonstrate usage of first aid procedures in various emergency situations
- Describe assessment of emergencies and treatment of the same with suitable procedures.
- Possess the knowledge and skills to perform Basic Life Support procedures in the Golden Hour.
- Able to assess the severity of an emergency condition so as to act in accordance and take necessary steps to prevent further complications.

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.

Part A: First Aid

Unit-1: Principles of First Aid & Resuscitation Techniques. (10 Hours)

i. General principles of first aid - definition, principles, responsibilities and golden rules
ii. Resuscitation techniques – Basic Life Support (BLS), mouth to mouth ventilation, artificial ventilation, Sylvester method, Advanced Cardiac Life Support (ACLS), Transportation and handling of patients.

Unit-2: General principles of treatment (10 Hours)

i. Unconsciousness - general principles of treatment & recovery position
ii. Head injury, Syncope, Epilepsy, febrile convulsions
iii. Asphyxia, Aspiration, drowning, suffocation and strangulation

Unit-3: Injuries & Dressings (10 Hours)

i. Road accidents, chest injury, blast injury, crush injury
ii. Hemorrhage, bleeding & Shock
iii. Fractures, sprains and strains
iv. Wounds – Bandages & dressing and slings

Unit-4: Bites & Environmental Hazards (10 Hours)

i. Poisoning, Dog bite, snakebite, scorpion bite and bee sting
ii. Effect of temperature, sunburn, hypothermia, frostbite, heat exhaustion, heat stroke, Burns and scalds, electrical injuries.

Part B: Emergency Medicine

Unit-5: Cardiovascular Emergencies (10 Hours)

Basic Life Support [BLS], Advanced Cardiac Life Support [ACLS] – Cardiac Arrest, Cardiogenic Shock, Acute Myocardial Infarction and Cardiac Arrhythmias, Hypertensive Emergencies, Cardiac Tamponade.

Unit-6: Respiratory Emergencies (10 Hours)

Acute Respiratory Failure, Status Asthmaticus, Spontaneous Pneumothorax and Hemoptysis, Pneumonia, ARDS.

Unit-7: Gastrointestinal Emergencies (10 Hours)

Acute Gastroenteritis, Perforated Peptic Ulcer, Hematemesis, Hepatic Pre-Coma & Coma, Acute Pancreatitis.

Unit-8: **Neurological Emergencies (10 Hours)**

Management of an unconscious Patient, Cerebrovascular Catastrophes – Embolic, Hemorrhagic and Convulsions & Status Epilepticus, GBS, TIA.

Unit-9: Renal Emergencies (10 Hours)

Renal System: Acute Renal Failure, Renal Colic, Hematuria, Hyperkalemia, Hypokalemia, Hypernatremia, Hyponatremia

Unit-10: Endocrinological Emergencies **(10 Hours)**

Hypoglycemia, Diabetic Ketoacidosis, Myxedema Coma, Thyrotoxic Crisis & Adrenal Crisis, Hypercalcemia, Hypocalcemia.

PRACTICALS

1. History taking and physical examination of cases **(10 Hours)**
2. Case sheet writing in different general cases (25) **(10 Hours)**
3. Demonstration of equipment and instruments used for investigation in modern diagnostics **(15 Hours)**
4. Demonstration tour of an ultra-modern super specialty hospital to see the latest techniques management of emergency conditions **(15 Hours)**

Text books:

1. Hutchison's Clinical Methods
2. Manual of Clinical Methods – PS Shankar
3. First Aid – Red Cross Society
4. First Aid – St. John Ambulance Association
5. First Aid – LC Gupta
6. Bailey and Love's Short Practice of Surgery
7. Harrison's Principle of Internal Medicine
8. Davidson's Principle and Practice of Medicine
9. Emergency Medicine – S N Chugh, Ashima Chugh
10. Medical Emergency, Diagnosis and Management

Subject title: CLINICAL NATUROPATHY (Duration 12 months)
Subject Code:
Clinical Naturopathy Theory Paper: BNYS407 T
Clinical Naturopathy Practical: BNYS407 P

Total Number of Hours: 300		**Theory:** 200	**Practical:** 100	
SCHEME OF EXAMINATION				
Total Marks: 200				
Theory: 130			**Practical: 70**	
Final Theory Exam	**Internal Assessment**	**Viva Voce**	**Final Practical Exam**	**Internal Assessment**
80	20	30	60	10

Goal:

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

Objectives

Knowledge:

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

- Illustrate decision making in Naturopathy;
- Understand the basic principles of screening and prevention of disease;
- Comprehend the scope of practice- patterns of use, fields of practice, regulations, limitations;
- Understand the concept of healing and disease crises and management of the same.
- Understand the pathogenesis of the disease in Naturopathy basis and preventive measures of the same;
- Create a specific module of therapy for the particular patient with varied presentations.

Skills:

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

- Apply his /her knowledge of clinical Naturopathy in managing various diseases;
- Demonstrate usage of therapeutic aspect of clinical Naturopathy in curative and rehabilitative therapy;
- Utilize his/ her knowledge of clinical Naturopathy for prevention of disease and promotion of health;

Integration:

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

THEORY

UNIT 1: Naturopathy Clinical Practice **(10 Hours)**

1. GCP – Guidelines and Standards
2. Decision Making in Naturopathy
3. Screening
4. Patterns and Field of practice
5. Scope of practice
6. Basics of Case Report Writing

UNIT 2: Science of the basic principles of Nature Cure **(10 Hours)**

1. Catechism
2. Western Principles
3. Indian Principles
4. Arogya Raksha Panchatantra
5. Dictum of Cure in Naturopathic Medicine
6. Holism

UNIT 3: Naturopathic perspective of Disease and diagnosis **(10 Hours)**

1. Naturopathic Case Taking
2. Pathophysiology of disease
3. Naturopathic Prescription Making
4. Diagnostic Techniques – An Overview

UNIT 4: Naturopathy management of Cardiovascular system **(10 Hours)**

- Atherosclerosis
- Coronary artery disease
- Valvular diseases

UNIT 5: Naturopathy management of Respiratory system **(10 Hours)**

- Allergic Rhinitis
- Bronchitis
- Bronchial Asthma
- Interstitial Lung diseases

UNIT 6: Naturopathy management of Gastrointestinal system (10 Hours)

- Irritable Bowel Syndrome
- Inflammatory Bowel Disease
- Gastric ulcer
- Duodenal ulcer
- Gastritis
- GERD
- Leaky gut syndrome

UNIT 7: Naturopathy management of Renal system (10 Hours)

- Nephritic syndrome
- Nephrotic syndrome
- Urolithiasis
- Chronic Kidney disease
- Urinary Tract Infection
- Urinary incontinence

UNIT 8: Naturopathy management of Liver, Pancreas and spleen system (10 Hours)

- Fatty liver
- Liver cirrhosis
- Hepatitis
- Acute pancreatitis
- Cholecystitis
- Cholelithiasis

UNIT 9: Naturopathy management of Nervous system (10 Hours)

- Parkinsonism
- Alzheimer’s disease
- Epilepsy
- Stroke
- Migraine
- Vertigo

UNIT 10: Naturopathy management of Integumentary system (10 Hours)

- Psoriasis
- Eczema
- Atopic Dermatitis
- Vitiligo
- Leukoderma

UNIT 11: Naturopathy management of Endocrine system (10 Hours)

- Hypothyroidism
- Hyperthyroidism
- Diabetes mellitus
- Hyperpituitarism

UNIT 12: Naturopathy management of Musculoskeletal system (10 Hours)

- Arthritis
- Fibromyalgia
- Muscular dystrophy
- Osteomyelitis

UNIT 13: Naturopathy management of Reproductive system (10 Hours)

- Dysmenorrhea
- PCOS
- Infertility
- Pelvic Inflammatory Disease
- PMS
- Perimenopause
- Nodular Hyperplasia of Prostate

UNIT 14: Naturopathy management of Specialized Conditions (20 Hours)

1. Psychosomatic disorders
2. Metabolic disorders
    - Metabolic syndrome
    - Malabsorption syndrome
    - Obesity
3. Infectious disorders
4. Psychological disorders
5. Specialized condition – Cancer, Autoimmunity, Hypersensitivity, Insomnia

UNIT 15: Generalized conditions and naturopathic management (20 Hours)

1. Pain
2. Swelling
3. Fever
4. Sleep irregularities
5. Weakness
6. Edema
7. Numbness
8. Dizziness
9. Anemia
10. Acidity

UNIT 16: Applied Naturopathy Medicine (20 Hours)

1. Acute Emergency Management in Naturopathy
2. Wellness and Preventive medicine
3. Lifestyle medicine
4. Functional medicine
5. Geriatric medicine
6. Rehabilitation medicine
7. Antenatal management
8. Occupational health

UNIT 17: Hospital Management **(10 Hours)**

1. Hospital administration
2. Managerial skills and Hospital Organization
3. Role of Hospital in Health Care
4. Hospital Planning and Design
5. Special Features of Nature Cure Hospital
6. Hospital services
    - Clinical
    - Clinical supportive
    - Nursing
    - Specialized

PRACTICAL

1. Case-history taking, documentation and complete management protocol of at least 30 cases. **(50Hrs)**
2. Clinical dissertation on any one disease involving multiple patients. **(50Hrs)**

Text books:

1. Clinical Naturopathy: An Evidence-Based Guide to Practice-Jerome Sarris, Jon Wardle
2. Clinical Naturopathic Medicine - Leah Hechtman
3. The Clinician's Handbook of Natural Medicine - Joseph E. Pizzorno Jr.
4. Fasting-The Ultimate Diet - Allan Cott
5. Mucusless Diet Healing System - Arnold Ehret
6. The Fasting Cure (Classic Reprint) - Upton Sinclair
7. Fasting Can Save Your Life - Herbert M. Shelton

Subject title: RESEARCH METHODOLOGY & RECENT ADVANCES (Duration 12 months)
Subject Code:
Research Methodology and Recent Advances Theory Paper: BNYS408 T
Research Methodology and Recent Advances Practical: BNYS408 P

Total Number of Hours: 150		**Theory:** 100	**Practical:** 50	
SCHEME OF EXAMINATION				
Total Marks: 200				
Theory: 130			**Practical: 70**	
Final Theory Exam	**Internal Assessment**	**Viva Voce**	**Final Practical Exam**	**Internal Assessment**
80	20	30	60	10

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.

Objectives

Knowledge:

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

- 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.
- Illustrate statistics and probability theory;
- Use technological aids for preparing research reports;
- Demonstrate knowledge about inter-disciplinary research

Skills:

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

- Prepare a research study, conduct, evaluate and publish it
- Interpret research findings and analyze whether data is significant or not;

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.

THEORY

Unit-1: **Research Methodology** **(10 Hrs)**

i. The research processes. Methodology and methods.
ii. The design of a study.
iii. Literature review.
iv. Ethics of research.
v. Types of common designs. Their advantages and disadvantages.
vi. Sampling.

Unit-2: Experimental methods & Descriptive statistics **(20 Hrs)**

i. The experimental and quasi-experimental methods. Correlation studies.
ii. Measurement tools: Observations, questionnaires and others.
iii. Data organization in Excel and SPSS.
iv. Descriptive statistics: Measures of central tendency, measures of dispersion. Correlation coefficients.
v. Graphical representations of data: Simple graphs, the box and whiskers plot.
vi. Reliability. The different ways of measuring reliability.
vii. Validity. Types of validity.

Unit-3: Inferential Statistics and Probability Theory **(25 Hrs)**

i. Inferential statistics – populations and samples.
ii. Elementary concepts in probability theory
iii. The normal distribution. Z-values and probability
iv. Calculating probabilities when population parameters are known

Unit-4: Research Reports **(15 Hrs)**

i. Microsoft word, excel and power point
ii. Reading research reports
iii. Writing research reports
iv. Presentations

Unit-5: Other streams **(30 Hrs)**

i. Inter-Disciplinary Research
ii. Introduction to research in Management studies
iii. Introduction to research in Education, History, and Anthropology.
iv. Introduction to research in social studies and Humanity.
v. Introduction to research in Linguistics
vi. Introduction to research in Jurisprudence.
vii. Introduction to research in science and technology

PRACTICAL

1. Dissertation on any one research study (basic or clinical with sample size of minimum (10). Presentation of dissertation. **(20Hrs)**
2. Research paper interpretation and presentation **(20Hrs)**
3. Single case study from hospital **(10Hrs)**

Text books:

1. Kothari, C.R.: Research Methodology, Methods and Techniques(VishwaPrakashan, New Delhi, 1985)
2. Telles, S.: Research Methods (Swami Vivekananda *Yoga* Prakashan, Bangalore)

References:

1. Robin Monro: *Yoga* research bibliography scientific studies on *Yoga* and meditation(*Yoga* Biomedical Trust, England 1989
2. Michael H. Cohen: Complementary and Alternative Medicine: Legal Boundaries and regulatory Perspectives (Paperback - Aug 19, 1997)
3. Jerrold H. Zar: Biostatistical Analysis person education.
4. Russell A. Jones: Research Methods in the Social and behavioral science (Sinauer Associates, Saunderland‘s Massachusetts)
5. A.K. Singh: Tests, Measurements and Research Methods in Behavioral Sciences (BharatiBhavan Publishers)
6. J.N.S. Matthews: An introduction to randomized controlled clinical trials (Arnold, London)
7. J.S.P. Lumley: Research: - Some Ground Rules W. Benjamin (Oxford University Press)
8. Herman J. Ader: Research Methodology in the life, behavioral and social Sciences Gideon J. Mellebeegh (SAGE Publications).