

Contents

Sl. No.	Curriculum contents	Page number
1.0	Introduction	3
2.0	Goals of BNYS course	4
2.1	Institutional goals	5
3.0	Objectives for Medical Graduate Training Program	6
4.0	Norms related to BNYS course	6
4.1	Course of study	6
4.2	Attendance	6
5.0	Teaching hours	7
5.1	First year	7
5.2	Second year	8
5.3	Third year	9
5.4	Fourth year	10
6.0	Internship programs	11
7.0	Scheme of examination	13
7.1	Eligibility for examination	19
7.2	Criteria for pass	20
7.3	Declaration of pass	20
7.4	Grading system	20
7.5	Cumulative grade point average (CGPA)	21
7.6	Award of prizes and medal	21
8.0	FIRST YEAR BNYS	
8.1	Anatomy	23
8.2	Physiology	28
8.3	Biochemistry	36
8.4	Philosophy of Naturopathy	41
8.5	Principles of Yoga	46
9.0	SECOND YEAR BNYS	
9.1	Pathology	51
9.2	Microbiology	59
9.3	Community medicine	63
9.4	Yoga philosophy	67
9.5	Basic Pharmacology	71
9.6	Colour and Magneto therapy	74
9.7	Forensic medicine	77
10.0	THIRD YEAR SUBJECTS	
10.1	Manipulative therapy	83
10.2	Acupuncture and Acupressure	87
10.3	Yoga and its applications	90
10.4	Nutrition and Medicinal Herbs	93
10.5	Diagnostic Methods in Naturopathy	98
10.6	Diagnostic Methods in Conventional Medicine	101
10.7	Psychology and Basic Psychiatry	104

11.0	FOURTH YEAR SUBJECTS	
11.1	Fasting Therapy and Dietetics	110
11.2	Obstetrics and Gynecology	113
11.3	Yogic therapy	118
11.4	Hydro therapy and Mud therapy	121
11.5	Physical Medicine and Rehabilitation	126
11.6	First Aid and Emergency Medicine	130
11.7	Clinical Naturopathy	133
11.8	Research Methodologies and Recent Advances	136

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 to 5½ 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, and 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 FOR MEDICAL GRADUATE TRAINING PROGRAM

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 TO 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 (50%) 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)**

Subject Code	Name of Subject	Paper Code	Paper	Total Hours
BNYS101	Anatomy	BNYS101 T1	Anatomy I	500hrs
		BNYS101 T2	Anatomy II	
		BNYS101 P	Anatomy Practical	
BNYS102	Physiology	BNYS102 T1	Physiology I	500hrs
		BNYS102 T2	Physiology II	
		BNYS102 P	Physiology Practical	
BNYS103	Biochemistry	BNYS103 T	Biochemistry	300hrs
		BNYS103 P	Biochemistry Practical	
BNYS104	Philosophy of Nature Cure	BNYS104 T	Philosophy of Nature Cure	330hrs
		BNYS104 P	Philosophy of Nature Cure Practical	
BNYS105	Principles of Yoga	BNYS105 T	Principles of Yoga	450hrs
		BNYS105 P	Principles of Yoga Practical	
BNYS106	Sanskrit (Non Exam)			100hrs
		Total Hours		2180hrs

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

Subject Code	Name of Subject	Paper Code	Paper	Total Hours
BNYS201	Pathology	BNYS201 T1	Pathology I	300
		BNYS201 T2	Pathology II	
		BNYS201 P	Pathology Practical	
BNYS202	Microbiology	BNYS202 T	Microbiology	250
		BNYS202 P	Microbiology Practical	
BNYS203	Community Medicine	BNYS203 T	Community Medicine	250
		BNYS203 P	Community Medicine Practical	
BNYS204	Yoga Philosophy	BNYS204 T	Yoga Philosophy	350
		BNYS204 P	Yoga Philosophy Practical	
BNYS205	Basic Pharmacology	BNYS205 T	Basic Pharmacology	100
BNYS206	Colour Therapy and Magneto biology	BNYS206 T	Colour Therapy and Magneto biology	150
		BNYS206 P	Colour Therapy and Magneto biology Practical	
BNYS207	Forensic Medicine & Toxicology	BNYS207 T	Forensic Medicine & Toxicology	100
		BNYS207 P	Forensic Medicine & Toxicology Practicals	
			Total Hours	1600

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

Subject Code	Name of Subject	Paper Code	Paper	Total Hours
BNYS301	Manipulative Therapy	BNYS301 T	Manipulative Therapy	250
		BNYS301 P	Manipulative Therapy Practical	
BNYS302	Acupuncture & Acupressure	BNYS302 T	Acupuncture & Acupressure	250
		BNYS302 P	Acupuncture & Acupressure Practical	
BNYS303	Yoga& Its Applications	BNYS303 T	Yoga& Its Applications	250
		BNYS303 P	Yoga& Its Applications Practical	
BNYS304	Nutrition & Medicinal herbs	BNYS304 T	Nutrition & Medicinal herbs	250
		BNYS304 P	Nutrition & Medicinal herbs Practical	
BNYS305	Naturopathy Diagnosis	BNYS305 T	Naturopathy Diagnosis	200
		BNYS305 P	Naturopathy Diagnosis Practical	
BNYS306	Modern Diagnosis	BNYS306 T	Modern Diagnosis	250
		BNYS306 P	Modern Diagnosis Practical	
BNYS307	Psychology & Basic Psychiatry	BNYS307 T	Psychology & Basic Psychiatry	150
		BNYS307 P	Psychology & Basic Psychiatry Practical	
			Total Hours	1600

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

Subject Code	Name of Subject	Paper Code	Papre	Total Hours
BNYS401	Fasting Therapy & Dietetics	BNYS401 T	Fasting Therapy & Dietetics	250
		BNYS401 P	Fasting Therapy & Dietetics Practical	
BNYS402	Obstetrics & Gynecology	BNYS402 T	Obstetrics & Gynecology	250
		BNYS402 P	Obstetrics & Gynecology Practical	
BNYS403	Yoga Therapy	BNYS403 T	Yoga Therapy	225
		BNYS403 P	Yoga Therapy Practical	
BNYS404	Hydrotherapy & Mud Therapy	BNYS404 T	Hydrotherapy & Mud Therapy	275
		BNYS404 P	Hydrotherapy & Mud Therapy Practical	
BNYS405	Physical Medicine & Rehabilitation	BNYS405 T	Physical Medicine & Rehabilitation	250
		BNYS405 P	Physical Medicine & Rehabilitation Practical	
BNYS406	First Aid & Emergency Medicine	BNYS406 T	First Aid & Emergency Medicine	150
		BNYS406 P	First Aid & Emergency Medicine Practical	
BNYS407	Clinical Naturopathy	BNYS407 T	Clinical Naturopathy	300
		BNYS407 P	Clinical Naturopathy Practical	
BNYS408	Research Methodology & Recent Advances	BNYS408 T	Research Methodology & Recent Advances	150
		BNYS408 P	Research Methodology & Recent Advances Practicals	
			Total Hours	1850

INTERNSHIP PROGRAM:

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

Sl.No.	Department	Duration
1.	Philosophy of <i>Yoga</i> and Naturopathy	1 Month
2.	<i>Yoga</i> 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.

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 and 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)

[illegible]

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.	<i>Yoga</i> & 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.	<i>Yoga</i> 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

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

& Section –B (70 Marks).
 - Section A will contain 10 Multiple Choice Questions – 1 mark each. No choice provision is allowed in Section A.
 - Section B will contain 2 Parts. Part – 1 will have 2 Long Essays of 10 marks each with provision of 1 choice. Part – 2 will have 6 Short Essays of 5 marks each with provision of 2 choices and 10 Short Notes of 2 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.
5. 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:

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

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

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 | v. Epididymis |
| ii. Testes | vi. Seminal Vesicles |
| iii. Vas Deferens | vii. Ejaculatory Duct |
| iv. Spermatic Cord | 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 | vi. Spleen |
| ii. Pineal | vii. Pancreas |
| iii. Thyroid | viii. Suprarenal glands |
| iv. Parathyroid | ix. Ovaries and Testes |
| v. Thymus | |

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

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**(20Hrs)**

- 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– 5 : 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 fates 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 (25Hrs)

Heart

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

Electrocardiography

- a. Einthoven'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**(15Hrs)**

- 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****(25Hrs)**

- 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 (35Hrs)**
- Determination of Pulse
 - Determination of the effect of posture and exercise on blood pressure
 - Clinical examination of the human cardiovascular system (CVS)
- III. Respiration (30Hrs)**
- PEFR
 - Spirometry (demonstration)
 - Examination of human respiratory system
- IV. Neurology**
- Neuromuscular physiology (30Hrs)
 - Handgrip dynamometer
 - Ergograph- work done
 - Neurophysiology (35Hrs)
 - Examination of motor and sensory system
 - Examination of cranial nerves
 - Special senses (30Hrs)
 - Determination of visual acuity
 - Clinical assessment of colour vision (Demonstration)
 - Perimetry: mapping of visual field
 - SOPE and tests

Recommended books:

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

Reference books:

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

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- 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 Voice		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

(10Hrs)

- | | |
|------------------------------------|-----------------------------|
| i. Cell structure | iii. Subcellular organelles |
| ii. Transport across cell membrane | 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 | vi. TCA cycle and biological oxidation |
| ii. Pyruvate oxidation | vii. HMP shunt |
| iii. Glycogenolysis | viii. Galactose and fructose metabolism |
| iv. Gluconeogenesis | ix. Inborn errors of glucose metabolism |
| v. Glycogenesis | 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, Methionine, 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

(10Hrs)

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

Unit-13: Energy metabolism

(10Hrs)

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

Unit-14: Renal function and Liver function test

(4Hrs)

Unit-15: General techniques for separation, purification and quantitation

(10Hrs)

- 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 **(10Hrs)**

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

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 Patabhiraama 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 Bhawe
 - c. Vegiraju Krishnamraju
 - d. Dr. S J Singh
 - e. Dr J M Jussawala
 - f. Lakshman Sharma
 - g. B Venkat Rao
- 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

(10Hrs)

- 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
- iii. Homeopathy v. Siddha
- iv. Unani
- v. Comparative study of Naturopathy with other systems of medicine
- e. Ratricharya
- f. Ritucharya
- g. Vegadharanam

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

(10Hrs)

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: Energy Medicine

(10Hrs)

- i. Acupuncture, Acupressure, reflexology
- ii. Chromo and Magneto therapy

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 (BNYS105 T)

Unit-1: Yoga and its definitions (20Hrs)

- i. Meaning of Yoga
- ii. Definition of Yoga according to *Bhagavadgita*
- iii. According to *Yoga Vasistha*
- iv. According to Patanjali Yoga Sutras
- v. According to Vedas and Upanishads
- vi. According to Swami Vivekananda and Sri Aurobindo

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

- i. Yoga during the era of Ramayana and Mahabharata
- ii. Yoga during the time of Patanjali
- iii. Vedas, Upanishads and Puranas
- iv. Nath sects
- v. Indus valley civilization
- vi. Modern

Unit-3: Branches of Yoga (20Hrs)

- i. Raja Yoga
- ii. Jnana Yoga
- iii. Karma Yoga
- iv. Bhakti Yoga

Unit-4: Other branches of Yoga (20Hrs)

- i. Laya yoga
- ii. Tantra Yoga
- iii. Swara Yoga
- iv. Kundalini Yoga
- v. Hatha Yoga
- vi. Mantra Yoga
- vii. Kriya Yoga

Unit-5: Introduction to Ashtanga Yoga- according Patanjali (20Hrs)

- i. Yama
- ii. Niyama
- iii. Asana
- iv. Pranayama
- v. Pratyahara
- vi. Dharana
- vii. Dhyana
- viii. Samadhi

Unit-6: Concept of yogic practice (130Hrs)

- i. Concept of Asana, it's types (Asana for beginners, Intermediate practitioners and Advance practitioners) and other categories
- ii. Difference between Asana and Exercises
- iii. Precaution and philosophical benefits of Asanas
- iv. Kriya, it's types
- v. Concept of Doshas and Importance of Shatkriyas in balancing the Doshas

- vi. Pranayama, it's types
- vii. Panchapranas and their physiological functions and Upapranas and their functions
- viii. Mudra and various types of Mudras with benefits (Chin, Chinmaya, Adi, Brahma, Sambhavi, Akashi, Tadagi, Sankha, Hriday mudra)
- ix. Principles behind the practices of Mudras
- x. Bandha and its types with benefits (Maha, Moola, Uddiyan and Jalandhar Bandha)
- xi. Principles of Bandhas
- xii. Concept of Dharana, Dhyana and Samadhi with example
- xiii. Dhyana and it's types
- xiv. Difference between Dharana and Trataka
- xv. Difference between Dhyana and Hypnosis
- xvi. Difference between Samadhi and sleep

Unit-7: Structure of body according to Yoga

(20Hrs)

- 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

PRACTICAL BNYS 105 P

- | | |
|-------------------------------|------------------------|
| 1. Joint movements | (10Hrs) |
| 2. Loosening exercises | (20Hrs) |
| 3. Sukshma Vyayama | (20Hrs) |
| 4. Stretches | (30Hrs) |
| 5. Breathing exercises | (20Hrs) |
| 6. Suryanamaskara | (10Hrs) |
| 7. Asanas | (50Hrs) |
| i. Standing | |
| a. Tadasana | f. Utthita Trikonasana |
| b. Ardha Kati Chakrasana | g. Veerabhadrasana |
| c. Kati Chakrasana | h. Parsvottanasana |
| d. Trikonasana | i. Parighasana |
| e. Vrikshasana | |
| ii. Supine | |
| a. Shavasana | f. Pawanmuktasana |
| b. Matsyasana | g. Sethubandhasana |
| c. Sarvangasana | h. Vipareetakarani |
| d. Halasana | i. Karnapiedasana |
| e. Chakrasana | j. Suptakonasana |
| iii. Prone | |
| a. Makarasana | d. Shalabhasana – 1 |
| b. Bhujangasana – 1 and 2 | e. Dhanurasana |
| c. Ardha shalabhasana | f. Adhomukha svanasana |
| iv. Sitting | |
| a. Vakrasana | i. Ardha Navasana |
| b. Ardhamatsyendrasana | j. Gomukhasana |
| c. Paschimottanasana | k. Veerasana |
| d. Usthrasana | l. Baddha Konasana |

- e. Vajrasana
- f. Padmasana
- g. Baddha Padmasana
- h. SuptaVajrasana

- m. Janusirshasana
- n. Upavistha Konasana
- o. Shashankasana

2. **Pranayama**

(20Hrs)

- a. Bhastrika
- b. Sheetkari
- c. Sheetali
- d. AnulomaViloma
- e. Ujjayi
- f. Bhramari
- g. Kapalbhata pranayama

3. **Kriya**

(20Hrs)

- a. Jala neti
- b. Sutra neti
- c. Vamana dhauti

Recommended books:

1. Basis and definitions of Yoga – Vivekananda Kendra
2. Asanas – Swami Kuvalyananda
3. The gospel of Buddha – Parul Caruso
4. The Gospel of Shri Ramakrishna – Mahendranatha Gupta
5. Complete works of Shri Aurobindo
6. Asanas, Pranayama, Bandhas, Mudras – Swami SatyanandaSaraswathi
7. Hatha Yoga Pradipika – Swami Svatmarama
8. Raja, Hatha, Jnana, Bhakti Yoga – Swami Vivekananda

*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 Assessment	Viva Voice	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 surveillance
- 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, Leiomyoma, Fibrosarcoma, Lymphosarcoma, Liposarcoma, Angiosarcoma, and Leiomyosarcoma
- 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: autosomal dominant and recessive
- iv. Genetic Diagnostic Techniques: Karyotyping, FISH

Unit-1: Haematological Disorder

(15Hrs)

- i. Disorders of RBC
 - a. Definition, morphologic and etio-pathologic classification of anemia
 - b. Iron deficiency anemia, B12 and folate deficiency anemia, sideroblastic 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 thromboangiitis obliterans
- iv. Rheumatic heart disease, endocarditis,
- v. Hypertension: primary, secondary
- vi. Angina: Stable, Unstable, Prinzmetal's
- 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), crescentic 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. Hyperplasia and adenoma of parathyroid
- vi. Adrenal gland, Addison's disease, Cushing's syndrome
- vii. Pheochromocytoma, neuroblastoma

Unit-11: Musculoskeletal pathology

(5Hrs)

- i. Osteomyelitis and osteoporosis
- ii. Rickets and osteomalacia
- iii. Osteitis fibrocystica and Paget's disease, fibrous dysplasia
- iv. Duchenne 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. Myasthenia gravis
- iv. Systemic lupus erythematosus

Unit-13: Diseases of Nervous System

(5Hrs)

- i. Meningitis,
- ii. Tumors of CNS
 - a. Meningioma
 - b. Astrocytoma
- iii. Tumors of peripheral nerves
 - a. Neurofibroma
 - b. Schwannoma
- iv. Encephalitis
- v. Degenerative Diseases
 - a. Parkinson's disease
 - b. Alzheimer's disease
 - c. Multiple sclerosis
 - d. Motor neuron disease
 - e. Prion disease
 - f. Vitamin 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. Spleno 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 BNYS 201 P

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. Hemograms in anemia
- ii. Iron deficiency anemia
- iii. Macrocytic anemia
- iv. Microcytic anemia
- v. Hemolytic anemia
- vi. Meningitis
- vii. Enzyme levels in MI
- viii. Hemograms in 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 202 T

Microbiology Practical: BNYS 202 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 nosocomial 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 202 T)

Unit-1: General Microbiology

(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-2: Immunology

(25Hrs)

- i. Immunity
- ii. Structure and Function of Immune System
- iii. Antigen
- iv. Antibodies-Immunoglobulin's
- v. Antigen and Antibody reactions
- vi. Complement System
- vii. Immune response
- viii. Hypersensitivity
- ix. Auto immunity
- x. Transplantation Immunity & Tumor Immunity

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. Enterobacteriaceae
- 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 (BNYS 202 P)

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, Anaerobic jar, Filters, Tuberculin syringe, Surgical gloves, VDRL slides, Microtitre plate, Sterile swab, WIDAL rack

Unit-4: Sterilization and disinfection (10Hrs)

Unit-5: Culture media (15Hrs)

- i. Classification of Media
- ii. Preparation of media-Liquid, Solid, enriched media, selective media, Indicator media

Unit-6: Culture method (10Hrs)

- i. Principles 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 (6Hrs)

- 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-Jayaram Panicker
4. Bacteriology –Dey
5. Text book of Microbiology –Chakraborty
6. Text book of practical Microbiology –Subhash Chandra Parija

Reference books

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

Subject Name: COMMUNITY MEDICINE

Subject Code: BNYS 203 T& BNYS 203 P

Subject code: BNA-2001 & BNA-2004				
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	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-203 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)
- 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
- 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, hospital waste management.

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 (BNYS 203 P)**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-204 T, BNYS-204 P

Total number of hours: 350		Theory:150		Practical: 200	
SCHEME OF EXAMINATION					
Total marks-200					
Theory: 130			Practical:70		
Final theory exam	Internal assess ment	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 204 T

Unit-1: Nyaya and Vishesika

(10Hrs)

- Nature of physical world
- Individual soul, liberation and concept of supreme soul in Indian philosophy
- Theory of body, mind and soul and philosophical background
- Category of substance-Nava dravyas
- Category of quality-24 gunas

Unit-2: Sankhya and Vedanta

(10Hrs)

- Theory of cause and effect; Prakriti and Purusha
- Process of evolution of universe and concept of liberation
- Practical teachings of Sankhya
- Concept of Atman, Brahma, Maya, Universe, God; the self and human life
- Liberation and means of attaining it

Unit-3: Buddhism and Mimamsa

(20Hrs)

- i. Four main schools of Buddhist philosophy
- ii. Atman, Brahma, Maya, Universe, God; the self and human life
- iii. Major teachings of Mimamsa system; selfless action, nonattachment, self-control, self-discipline,
- iv. Daily schedule for psychophysical wellbeing, social awareness, sense of equality, unity with diversity, selectiveness.

Unit-4: Concept of mind, Obstacles and Kleshas in the context of Patanjali Yoga Sutras

(20Hrs)

- i. Concept of Chitta, Chittabhāṁśa, Chitta-vṛttinirodhapāya (Abhyasa and Vairagya), Chittavikshepas (Antarayas) and Chitta-prasadanam
- ii. Obstacles and hindrances of Sadhana (Vyadhi, Styana, Samsaya, Pramada, Alasya, Avirati, Bhranti, Alabdha, Bhūmikatva, Anavasthi)
- iii. Cultivating positive attitudes
- iv. Kriya Yoga (Tapas, Svadhyaya, Isvara Pranidhana)
- v. Pancaklesas (Avidya, Asmita, Raga, Dvesa, Abhinivesha)
- vi. Methods of destroying Klesas (Pratiprasava and Dhyana)

Unit-5: Samadhi, concept of Vibhuti and Kaivalya

(15Hrs)

- i. Type and nature of Samadhi
- ii. Samprajnata, Asamprajnata, Sabija & Nirbija Samadhi
- iii. Difference between Sapattis and Samadhis
- iv. Samyama & three Parinama of Samyama
- v. The concept and description of Ashta siddhis
- vi. Nature of Kaivalya, Kavalya in relation to Triguna and Dharmamegha Samadhi

Unit-6: Hatha Yoga its philosophy and practices

(15Hrs)

- i. Hatha Yoga, its meaning, definition, aim & objectives and misconceptions
- ii. Concept of Mathika, rules and regulations to be followed by a Hatha Yogi
- iii. Concept of Mitahara, Pathya and Apathya
- iv. Relationship between Hatha Yoga and Raja Yoga

Unit-7: Shodhana Kriyas and Asanas

(15Hrs)

- i. Shodhanakriyas in Hatha yoga pradiṭṭika and Gheranda Samhita, their benefits and precautions
- ii. Role of Shodhana-kriyas in Yoga sadhana and their importance
- iii. Yogasana, its definition, salient features and its importance in hatha Yoga sadhana
- iv. Asanas in Hatha Yoga pradiṭṭika and Gheranda Samhita, their techniques, benefits, precautions and importance

Unit-8: Pranayama, Bandhas and Mudras

(10Hrs)

- i. Concept of Puraka, Kumbhaka and Rechaka
- ii. Pranayama and its importance in Hatha Yoga sadhana
- iii. Astakubhakas, their benefits and Precautions
- iv. Pranayama practices in Hatha Yoga and Gheranda Samhita
- v. Bandhas and role of Bandhatrayas in Yoga sadhana

- vi. Fundamental mudras in Hatha Yoga and Gherandasamhita, benefits and precautions

Unit-9: Pratyahara, Nadanusandhana and Samadhi in Hatha Yoga and Gheranda Samhita
(15Hrs)

- i. Concept of Pratyahara, Dharana and Dhyana in Gherandasamhita, their techniques and benefits
- ii. Concept of Samadhi in Hatha Yoga pradipika, Samadhi lakshanam and Hatha yoga siddhi lakshanam
- iii. The concept of Nada, four avasthas (stages) of Nadanusandhana and its Siddhis
- iv. Concept of Bindu, its evolution and techniques to preserve it

Unit-10: Concept of Ghata, Dhyana, Samadhi and Svara Yoga in the context of Gherandasamhita and Shiva svarodaya

(20Hrs)

- i. Concept of Ghata and its correlation with body and importance of a Ghata Yoga
- ii. Concept of Dhyana and its types (Sthula, Jyoti and Sukshma)
- iii. Concept of Samadhi and its types (Dhyana yoga, Nada yoga, Rasananda yoga, Laya siddhi yoga, Bhakti yoga and Raja yoga)
- iv. Concept of Svara, its significance with reference to Shiva svarodaya

PRACTICAL (BNYS 204 P)

1. Joint movements: Loosening exercises, Sukshma Vyayama, Stretches, Breathing exercises
(20Hrs)

2. Suryanamaskara. **(20Hrs)**

3. Asanas **(80Hrs)**

i. Standing

- a. Tadasana
- b. Ardha Kati Chakrasana.
- c. Kati Chakrasana.
- d. Vrikshasana
- e. Utthita Trikonasana
- f. Veerabhadrasana
- g. Parsvottanasana
- h. Trikonasana
- i. Konasana
- j. Padangushtasana
- k. Garudasana
- l. Padahastanasana (Advanced)

ii. Sitting

- a. Siddhasana
- b. Bhadrasana
- c. Samasana
- d. Swastikasana
- e. Simhasana
- f. Parivarta Janusirshasana
- g. Tolangulasana
- h. Ardha Matsyendrasana – 2
- i. Kurmasana

- j. Mayurasana
- k. Sirshasana

iii. Prone

- a. Makarasana
- b. Shalabhasana – 1
- c. Bhujangasana – 1 and 2
- d. Dhanurasana
- e. Ardha shalabhasana
- f. Adhomukha svanasana
- g. Shalabhasana – 2 and 3

iv. Supine

- a. Yoga nidrasana
- b. Garbhasana
- c. Karnapedasana
- d. Naukasana
- e. Shavasana
- f. Pawanmuktasana
- g. Suptakonasana
- h. Sarvangasana
- i. Sethubandhasana
- j. Vipareetakarani
- k. Halasana
- l. Chakrasana

4. **Pranayama** (40Hrs)
Bhastrika, Sheetkari, Sheetali, Bhramari, Ujjayi, Surya anuloma viloma

5. **Kriya** (40Hrs)
i. Jala neti, Sutra Neti, Vamana dhauti, VastraDhauti
ii. Trataka – Jyoti & Bindu
iii. Kapalabhati

Recommended books:

1. Basis and definitions of Yoga – Vivekananda Kendra
2. Asanas – Swami Kuvalyananda
3. The gospel of Buddha – Parul Caruso
4. The Gospel of Shri Ramakrishna – Mahendranatha Gupta
5. Complete works of Shri Aurobindo
6. Asanas, Pranayama, Bandhas, Mudras – Swami SatyanandaSaraswathi
7. Hatha Yoga Pradipika – Swami Svatmarama
8. Raja, Hatha, Jnana, Bhakti Yoga – Swami Vivekananda

Subject title: BASIC PHARMACOLOGY

Subject Code: BNYS 205 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	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-205 T)

Unit-1: General Pharmacology

(13Hrs)

- Nature and sources of drugs
- Routes of administration
- Absorption and bioavailability of a drug – factors affecting drug absorption and its bioavailability
- Distribution of a drug in the body
 - Plasma concentration
 - Drug storage
 - Placental transfer
- Fate of the drug
- Drug excretion
- Drug receptors
- Mechanism of action of a drug – types of drug action
- Adverse reaction to drug
- Drug toxicity in man –
 - drug intolerance
 - hemopoietic toxicity
 - hepatotoxicity
 - nephrotoxicity
 - 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. Opioid and Non-Opioid 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 Disinfectants

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 206 T & BNYS 206 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	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;
- Understand bio-magnetism, electro-magnetism, properties of magnets, mechanisms of action of magnets on the human body, magnetic overload, charging, modes of application, etc. and apply this knowledge to therapeutically use magnets;
- 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(BNYS 206 T)

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. Principle's 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.

Colour Therapy**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(BNYS 206 P)

- 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 Coghil
- 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 207 T & BNYS 207 P

Total Number of Hours: 100		Theory: 100		
SCHEME OF EXAMINATION				
Total Marks: 150				
Theory: 150			Practical: NA	
Final Theory Exam	Internal Assessment	Viva	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 -207 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 Ipsa Loquitur, Contributory negligence, Corporate negligence, Product liability, Therapeutic misadventure, Vicarious liability, Novus Actus 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)
- 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 -7: 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- 8: 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 -9: 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- 10: 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 if possible**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 (BNYS 301 T)

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)

- i. Physiological effect on muscle skeletal system
- ii. Physiological effect on digestive system
- iii. Physiological effect on cardiovascular system
- iv. Physiological effect on nervous system
- v. Physiological effect on respiratory system
- vi. Physiological effect on endocrine
- vii. Physiological effect on reproductive system

Unit 5: Special 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)

- | | |
|---|---|
| <ol style="list-style-type: none">a. Historyb. Physiological effectc. Spinal manipulative therapy | <ol style="list-style-type: none">d. The importance of spine in chiropractice. Chiropractic examinationf. 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 (BNYS 301 P)

Unit1: Full Body Massages (10)	(40HRS)
Unit 2: Chiropractic care	(5HRS)
Unit 3: TENS	(3HRS)
Unit 4: Activator adjustable tool (Impulse Device)	(3HRS)
Unit 5: Partial massages (35)	(20HRS)
Unit 6: Panchakarma demonstration and identification of different oils	(20HRS)
Unit 7: Demonstration of different methods of application	(6HRS)
i. Inhalation	
ii. Compression	
iii. Diffuses	
Unit 8: Local baths	(3HRS)

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	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 (BNYS 302 T)

Unit- 1: Definition, history, traditional & modern theories of Acupuncture. (20Hrs)

- i. Definition and history of acupuncture, story of acupuncture needles, philosophy of TAO.
- ii. Traditional theories of acupuncture -- (Concept Chi, Principles of Yin & Yang, Network of Jing-Luo, Five elemental & Organ clock theories, traditional laws of energy flows).
- iii. Modern theories of acupuncture -- (Neurological, neurotransmitter, bio-electrical, embryological, defence mechanism - tissue regeneration, hypnosis and placebo theories).

Unit- 2: Different types & sterilization of needles, techniques of needling. (10Hrs)

- i. Different types of acupuncture needle---Filiform, triangular, seven-star, pressball bearing, hot, roller, hidden subdermal needles.
- ii. Sterilization of needles--- Physical & Chemical methods.
- iii. Techniques of needling--- Depth & angle of needling.

Unit- 3: Posture of the patients, location & rules for the selection of Acupuncture points. (10Hrs)

- i. Posture of the patients--- Sitting & lying down position
- ii. 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.
- iii. Different rules for the selection of acupuncture points by applying traditional and modern theories of acupuncture.

Unit- 4: Effects, contraindications, complications & precautions of Acupuncture.

(10 Hrs)

- i. Effects of acupuncture (Subjective & Objective effects), Contraindications of acupuncture (Relative & Absolute contraindications), complications and precautions of acupuncture.

Unit- 5: The concept of meridians:

(30 Hrs)

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

UNIT- 6: Examination methods of traditional Chinese medicine

(10Hrs)

Pulse & Tongue diagnosis

UNIT- 7: Auriculotherapy & Scalp Acupuncture

(10Hrs)

Surface anatomy of ear & scalp, different areas, location of points, needling technique and therapeutic indications of auriculotherapy and scalp acupuncture.

UNIT- 8: Acupuncture anesthesia and types of stimulation in Acupuncture (10 Hrs)

Introduction, history, procedure, indications, contraindications and precautions of acupuncture anesthesia; different types of ancient (Needling, moxibustion and cupping) & modern (Electro, TENS, LASER, ultrasound, periosteal, point injecting and embedding therapy) stimulation technique.

UNIT- 9: Acupressure, Reflexology & Zone therapy (10 Hrs)

Definition, history, physiological effects, indications and contraindications of Acupressure, Reflexology and Zone therapy.

UNIT- 10: Acupuncture therapeutics (30 Hrs)

Neurological, pulmonological, cardiovascular, psychological, rheumatological, osteological, spinal disorders, endocrinological, gastrointestinal, genito-urinary, metabolic disorders.

PRACTICALS (BNYS 302 P)

Unit 1: Demonstration of needling techniques, moxibustion, cupping, TENS acupuncture and electro stimulation. (50 Hrs)

Unit 2: Each student should give treatment for at least 20 patients during the practical. (50 Hrs)

Reference books

1. Clinical practice of Acupuncture – A. L. Agarwal.
2. Clinical Acupuncture – Dr. Anton Jayasurya.
3. Principles and Practice of Acupuncture – Dr. J. K. Patel.
4. Health in your Hands - Devender Vora.
5. Clinical Acupuncture and Moxibustion – Liu Gong Wang.
6. Fundamentals of Acupuncture and Moxibustion - Liu Gong Wang / Akira Hyodo.
7. Advanced Acupuncture therapy – Arjun. L. Agarwal, Govind N Sharma.
8. Classical Acupuncture – The Standard textbook – Porket. Hempen, the China Academy.
9. Reiki:
 - Empowerment through Reiki – Paula Horan.
 - Reiki – Energy Medicine – Libby Barnett & Maggie Chamber with Susan Davidson.
10. 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: BNYS 303 T

Yoga and Its Application Practical: BNYS 303 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	Final Practical Exam	Internal Assessment
80	20	30	60	10

Goals

The goal of teaching yoga and its applications to undergraduate student is to provide them with comprehensive understanding of yoga with reference to traditional texts like *Patanjali Yoga sutras*, *Hatha Yoga Pratipika*, *Shiva Samhita*, *Gheranda 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 of the meditative styles
- Implement various exercises loosening or eye exercises or stretching to complement yoga practice

THEORY (BNYS 303 T)

Unit 1: Summary of Pathanjali yoga sutras (15Hrs)

Unit 2: Summary of Hatha yoga Texts (20 Hrs)

- a. Introduction to Hatha yoga
- b. Rules, Regulations and Goals for practice of Hathayoga
- c. Practices in Hatha Yoga: Asana, Bandha, Mudra, Pranayama, Shatkriya, Samadhi
- d. Aim of Hatha Yoga

Unit 3: Other streams of Yoga (10 Hrs)

- a. Swara Yoga
- b. Tantra Yoga
- c. Kundalini Yoga

Unit 4: Introduction, principles and practice and effects of Meditation and Relaxation Techniques (15 Hrs)

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

Unit 5: Psychophysiological changes with yoga practices (15 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 6: Applications of Yoga (15 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 7: Physical exercises for health and fitness (10 Hrs)

- a. Introduction
- b. Who should stretch
- c. When, how and why to stretch
- d. Relaxing stretches for back, leg, feet and ankles, hips, hamstrings and lower back
- e. stretching exercises for elderly
- f. Stretching exercises for abdominal muscles, arms, chest, ankle, legs, thighs, forearm and knees
- g. Techniques of walking, running, cycling, etc.
- h. Caring for the back
- i. General exercises
- j. Eyes Exercises: Benefits, methods and precautions

PRACTICAL (BNYS 303P)

- Unit 1:** All previous year asana and (40 Hrs)
Veerasana, Koormasana, Kukkutasana, Uttankoomasana, Matsyendrasana, Padmamayurasana, Simhasana, Sarvangasana (all variants), Sirsasana (all variants)
- Unit 2:** All loosening (*Sithilikarana Vyayama*) and breathing exercises (40 Hrs)
- Unit 3:** All previous year's pranayama – (40 Hrs)
plus, *Suryabedhana, Chandrabedhana*, cat and tiger breathing, new variants of pranayama.
- Unit 4:** All previous year's kriyas plus – (30 Hrs)
Danda dhouthi, Agnisara, Nauli, Bandas, mudras.

Textbooks

1. Autobiography of a yogi- Paramahansa 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 (BNYS 304 T)

Unit 1: Nutrition Biochemistry

(20 Hours)

1. Carbohydrates – Classification, Properties, digestion, absorption and metabolism, Blood glucose level.
2. Proteins – Structure, classification and properties. Digestion, absorption and amino acid and nucleotide metabolism.
3. Lipid – Structure, Classification and properties: Digestion and absorption. Lipid metabolism.
4. Vitamins and Minerals – Classification structure, properties and functions.
5. Hormones – Endocrine Glands, mechanism of hormone action and biochemical role of hormones.
6. Antioxidants – Definition, free radicals, oxygen free radicals, natural and diet derived antioxidants.
7. Oxidative stress and oxidant defense
8. Electrolytes, water and acid-base balance

Unit 2: Community Nutrition

(20 Hours)

1. What is nutrition healing
2. Clinical nutrition assessment of infants and children
3. Clinical and functional assessment of adults
4. Nutritional assessment of malnutrition by anthropometric methods
5. Laboratory tests for assessing nutritional status
6. Dietary assessment
7. Energy needs: assessment and requirements in humans
8. Social and cultural influences on food consumption and nutritional status
9. Body composition: influence of nutrition, physical activity, growth, and aging
10. Diet in work and exercise performance

Unit 3: Food Microbiology

(20 Hours)

1. Food additives, contaminants, and natural toxins
2. Carcinogens in food

Unit 4: Food Science

(20 Hours)

1. Introduction to food science and modern development.
2. Methods of cooking and the effect of cooking on nutrients.
3. Cereals, Pulses and legumes – structure, composite types and selection, methods of cooking, cooking losses.
4. Vegetable and fruits – Composition, recognition of quality, care in storage, methods of cooking, cooking losses.
5. Milk and Milk products – Types and composition, preparation, effect of cooking and use in cookery.
6. Egg, Meat, Fish and poultry – structure, composition quality care in storage, methods of cooking, effects of cooking.
7. Sugar, fats and oils – composition, types, characteristics and use in cooking

Unit 5: Clinical & Therapeutic Nutrition

(20 Hours)

1. Adaptation of therapeutic diets – Therapeutic diets, Types of therapeutic diets, Routine hospital diets, Mode of feeding.

2. Prevalence, etiology, clinical manifestations, dietary management and recent advance in the management of the following:
 - a. Nutrition in hypertension
 - b. Nutrition in pancreatic disorders
 - c. Nutrition in liver disorders
 - d. Nutrition in hyperlipidemia and atherosclerosis
 - e. Nutrition in prevention of cancer
 - f. Nutrition in rheumatic diseases
 - g. Nutritional management of diabetes
 - h. Nutrition in Obesity
 - i. Nutritional aspects in hematologic disorders
 - j. Renal disorders in nutrition
 - k. Nutrition in respiratory disease
3. Assessment of malabsorption
4. Nutrition and diet in alcoholism
5. Diagnosis and management of food allergies

Unit 6: Diet Therapy

(20 Hours)

1. Nutritional requirements during infancy
2. Diet, nutrition, and adolescence
3. Childhood obesity
4. Nutritional management of infants and children with specific diseases and/or conditions
5. Maternal nutrition
6. Nutrition in the elderly
7. Nutritive value of food ingredients commonly used in India
8. RDA – individuals and populations
9. Nutritional implications of vegetarian diets
10. Comparative study of modern nutrition and traditional naturopathy diet

Unit 7: Advance Nutrition

(20 Hours)

1. Control of food intake
2. Metabolic consequences of starvation
3. Fiber and other dietary factors affecting nutrient absorption and metabolism
4. Hormone, cytokine, and nutrient reactions
5. Nutrition and immune system
6. The hyper catabolic state
7. Nutrition and infection
8. Role/significance of nutrition
 - i. Regulation of gene expression
 - ii. Membrane and transport
9. Nutrition and medical ethics – the interplay of medical decisions, patients 'rights, and the judicial system.
10. Enteral feeding (only theory)
11. Parenteral nutrition (only theory)

Unit – 8: Medicinal herbs

(10 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. Embelica officinalis | 2. Cassia fistula |
| 3. Ficus glomerata | 4. Vetiveria zizanioides |
| 5. Cinnamomum camphora | 6. Moscardia charantia |
| 7. Tribulus terrestris | 8. Myristica fragrans |
| 9. Cuminum cyminum | 10. Sesamum indicum |
| 11. Ocimum sanctum | 12. Punica granatum |
| 13. Coriandrum sativum | 14. Azadirachta indica |
| 15. Allium cepa | 16. Piper longum |
| 17. Psoralea corylifolia | 18. Taxus baccata |
| 19. Aegle marmelos | 20. Semecarpus anacardium |
| 21. Phyllanthus niruri | 22. Piper nigrum |
| 23. Trigonella foenum – graecum | 24. Santalum album |
| 25. Allium sativum | 26. Mimosa pudica |
| 27. Corusc alamus | 28. Asparagus racemose |
| 29. Rauwolfia serpentina | 30. Curcuma longa |
| 31. Terminalia chebula | 32. Ferula narthex |
| 33. Syzygium aromaticum | 34. Terminalia bellerica |
| 35. Zingiber officinale | |

PRACTICAL (BNYS 304 P)

1. Visits to different diet departments of naturopathy and modern medicine hospitals (10 Hrs)
2. Menu planning using natural foods and raw diet in general (5 Hrs)
3. Demonstration of different therapeutic diets to various disorders (10 Hrs)
4. Preparation of low cost balanced diet for different population groups using natural foods (10 Hrs)
5. Serving duties in the diet department of the hospital (25 Hrs)
6. Visit to different nutrition centers like CFTRI, Mysore, NIN, Hyderabad etc. (10 Hrs)
7. Nutritional counselling to 20 patients (20 Hrs)
8. Case studies of 10 with records (10 Hrs)

Textbooks

1. Davidson and Passmore Human Nutrition – Passmore
2. Clinical Dietetics and Nutrition – FP Antia
3. Normal Therapeutic Nutrition – Corinne Robinson
4. Essentials of Food and Nutrition – Swaminathan
5. Sprouts – JD Vaishya 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

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	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 (BNYS 305 T)

Unit 1: Facial diagnosis

(32 hours)

- i. Introduction
- ii. Characteristics of healthy body
- iii. Foreign matter theory, toxemia theory, vitality theory
- iv. Physiological and pathological perspective of foreign matter, toxaemia and mm
- v. Unity of disease, Unity of cure- interpretation with contemporary medicine
- vi. Encumbrance, its types, its interpretation with contemporary medicine
- vii. Habits- significance, consequence and its correspondence in encumbrance
- viii. Significance of naturopathy treatment modalities in correction of encumbrance.

Unit 2: Introduction to Iridiagnosis

(8 hours)

- i. Definition and Historical Highlights
- ii. Anatomy of iris in detail
- iii. Conceptual theories of Iridiagnosis

Unit 3: Science of Iridiagnosis

(28 Hrs)

- | | |
|---|-----------------------------|
| a. Comparison of the science of iridiagnosis with concepts of <i>Drishtipraraksha</i> in <i>Ayurveda</i> and ophthalmology in modern medicine. | |
| b. Technique in iris reading | |
| c. Normal and abnormal iris | k. Lymphatic rosary |
| d. The vibratory theory and its significance | n. Injuries and surgeries |
| a. Diagnostic chart | o. Psora spot, scurf rim |
| b. Irido scope | p. Radii Solaris |
| c. Zones | q. Sympathetic nerve wreath |
| d. Sectorial division | r. Closed and open lesions |
| e. Interpretation of iris manifestation | s. Sodium ring |
| f. Inherent lesions and weakness | t. Circulatory indicators |
| g. Cataract | u. Toxic settlements |
| h. Nerve rings | |
| i. Drugs and chemicals appearance in the iris and their effect on the body | |
| j. 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

(6 hours)

- i. Characteristics of normal stool and urine
- ii. Abnormal characteristics and significance

Unit 5: Skin Diagnosis

(6 hours)

- i. Anatomy of skin
- ii. Skin types
- iii. Abnormality and its significance in Health
- iv. Comparison of skin diagnosis with *twakpareeksha* in *Ayurveda*

Unit 6: Tongue diagnosis (5 hours)

Unit 7: Pulse diagnosis (5 hours)

Unit 8: Chromo diagnosis (5 hours)

Unit 9: Advanced research updates (5 hours)

PRACTICAL (BNYS 305 P)

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. *Asthangahridayam*
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 (BNYS 306 T)

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. 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 (BNYS 306 P)

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

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 307 T & BNYS 307 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	

Goals and Objectives

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.

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 (BNYS 307 T)

Psychology

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

- 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 Hrs)

- 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 Hrs)

- 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 Hrs)

- 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 Hrs)

- i. Approaches to motivation
Evolutionary approach, Drive reduction theory, Optimum arousal theory, cognitive approach
- ii. Hunger
 - a. The biology of hunger and thirst
 - b. Environmental factors in the regulation of hunger, Eating and Weight
 - c. Sexuality - the biology of sex and the human sexual response: cognitive and sensory/perceptual factors & Cultural factors.
 - d. Psychosexual dysfunctions, Sexual behavior and orientation

Unit 6: Intelligence

(5 Hrs)

- 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 Hrs)

- 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 Hrs)

- 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 Hrs)

- 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 Hrs)

- 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 Hrs)

- 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 Hrs)

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

Unit 3: Somatoform and Dissociative disorders (6 Hrs)

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

Unit 4: Mood disorders (4 Hrs)

- i. Depressive disorders
- ii. Bipolar disorders

- iii. Suicide

Unit 5: Substance-related disorders

(4 Hrs)

- 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 Hrs)

- 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 Counseling

(4 Hrs)

Unit 8: Principles and techniques of counseling

(3 Hrs)

- 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.

PRACTICALS (BNYS 307 P)

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

(50 Hrs)

References:

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

*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 (BNYS 401 T)

PART A: FASTING

(75 Hrs)

Unit 1: Background of Fasting

(20 Hrs)

- i. Definition
- ii. Historical highlights
 - a. Indian: According to Vedas, Ayurveda, Epics and other pioneer in Naturopathy
 - b. Western
- iii. Evidence of fasting in animals and its benefits
- iv. Fasting in different religions

Unit 2: Physiology Of Fasting

(20 Hrs)

- i. Classification of fasting and its effects, limitations, according to
 - a. Duration (Short, long, intermittent, weekly)
 - b. Purpose (Preventive, therapeutic, religious, political)
 - c. Type (Dry, water, juice, mono diet)
- ii. Metabolism of fasting
- iii. Physiological changes of fasting in short, long, intermittent, dry, water, juice (lemon honey, tender coconut, sugarcane juice, alkaline juices, honey water etc.) and mono diet fasting.
- iv. Starvation – pathological features in different organ systems
- v. Difference between hunger and starvation

Unit 3: Practice Of Fasting

(30 Hrs)

- i. Rules and regulations for administering fasting
- ii. Rules and regulations for selection of patient for fasting
- iii. Hygiene and auxiliaries of fasting
- iv. Sane fasting
- v. Do's and don'ts of fasting
- vi. Preparation of individuals for fasting
- vii. Psychological effects and barriers for fasting
 - a. Crises during fasting therapy and its management
 - b. Significance of enema during fasting and its physiology
 - c. Significance of fasting in fever
 - d. Fasting for preservation of health
 - e. Contraindications and limitations of fasting

Unit 4: Research updates on fasting

(05 Hrs)

PART B: DIETETICS

(75 Hrs)

Unit 1: Dietetics in Naturopathy

(25 Hrs)

- i. Dietetic principles in naturopathy
- ii. Concept of wholesome diet
- iii. Customs and traditions of eating
- iv. Medical values of food
- v. Natural qualities/properties/characters of foods in naturopathy/Ayurveda/ modern nutrition

Unit 2: Raw Diet**(20 Hrs)**

- i. Importance of green vegetables, other vegetables, fruits and ingredients
- ii. Chemical composition of different raw juices and their effects and uses
- iii. Wheat grass, beetroot, cabbage, cucumber, garlic, papaya, mango, pineapple, pumpkins etc
- iv. Comparison with raw and cooked food
- v. Sprouts, nutrition and method
- vi. Dietary fiber and its therapeutic effects

Unit 3: Practice of Dietetics**(30 Hrs)**

- i. Food combination and health
- ii. Naturopathic hospital dietetics and classification
- iii. Disease management for different diseases
- iv. Food allergies and diet
- v. Seasonal changes
- vi. Dietary requirements for pregnancy, lactation and infancy
- vii. Food hygiene and health
- viii. Methods of cooking – nutrient losses and preservation
- ix. Emotional states and diet

PRACTICAL (BNYS 401 P)

1. Visits to different diet departments of naturopathy and modern medicine hospitals **(10 Hrs)**
2. Menu planning using natural foods and raw diet in general **(20 Hrs)**
3. Demonstration of different sprouts **(05 Hrs)**
4. Preparation of low-cost balanced diet for different population groups using natural foods **(20 Hrs)**
5. Canteen duties at different naturopathy hospitals **(05 Hrs)**
6. Visit to different nutrition centers like CFTRI, Mysore, NIN, Hyderabad etc. **(10 Hrs)**
7. Study of 20 fasting cases **(20 Hrs)**
8. 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 – FP Antia
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 (Hyderabad)
14. Publications of NIN, Hyderabad

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 (BNYS 402 T)

Unit-1: Obstetrics - Anatomy and Physiology

(32 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. 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
- 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

(8 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

(9 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

(4 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

(6 Hrs)

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

Unit-7: Examination of a gynecological patient and the diagnostic aids

(4 Hrs)

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

Unit-8: Pathology

(22 Hrs)

- i. Pelvic infection
 - a. Defense of the genital tract
 - b. Acute pelvic infection
- ii. Sexually transmitted diseases
 - c. Chronic Pelvic Infection
 - d. Genital tuberculosis

- 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
 - b. Prolapse
 - c. Chronic inversion
- vi. Infertility
 - a. Causes
 - b. Investigations
 - c. Treatment
 - d. Assisted reproductive techniques
 - e. Counseling techniques
- 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
 - b. Vagina
 - c. Cervix
 - d. Endometrium
- xiv. Genital malignancy
 - a. Cervical
 - b. Endometrial
 - c. Gestational trophoblastic neoplasia
 - d. Ovarian
- xv. Urinary problems in gynecology
 - a. Anatomy of the urethra-vesical unit
 - b. Genuine stress incontinence
 - c. Overflow incontinence
 - d. Retention of urine
 - 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

(16 Hrs)

- i. Contraception
 - a. Barrier methods
 - b. Natural
 - c. IUCD
 - d. Steroidal
 - e. Emergency
 - f. Sterilization
- ii. Special problems
 - a. Abnormal vaginal discharge
 - b. Pruritis vulvae
 - c. Pelvic pain
 - d. Postmenopausal bleeding
 - f. Breast in gynecology
 - g. Vaginismus
 - h. Dyspareunia
 - i. Hirsutism

- e. Low backache
- iii. Operative gynecology
 - a. Postoperative care
 - b. Dilation of cervix
 - c. Dilation and curettage
 - d. Dilation of and insufflation
 - e. Hystero-salpingography
 - f. Cervical biopsy
- iv. Endoscopic surgery in gynecology
 - a. Laparoscopy
 - b) Hysteroscopy
- j. Galactorrhea
- g. Cryosurgery
- h. Perineoplasty
- i. Amputation of cervix
- j. Abdominal hysterectomy
- k. Vaginal hysterectomy

Unit-10: Applied aspects of gynecology

(14 Hrs)

- a. Role of Naturopathy and *Yoga* in Gynecology
- b. Water treatments for gynecological disorders.

PRACTICALS (BNYS 402 P)

- 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 (BNYS 403 T)

Unit-1: Introduction to Yogic Therapy / Basis of yogic Therapy (5 Hrs)

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: Yoga therapy, research papers for (45 Hrs)

- | | |
|-------------------------------|-----------------------------|
| a. Cardiovascular diseases | g. respiratory diseases |
| b. Psychiatric disorders | h. Metabolic diseases |
| c. Musculoskeletal disorders | i. Ophthalmologic disorders |
| d. Nervous system disorders | j. Pediatric disorders |
| e. Gastrointestinal disorders | k. ENT Disorders |
| f. Hormonal diseases | l. OBG disorders |

Unit-4: 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*

Unit-5: 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)

Unit-06: Subtle Energy Medicine (5 Hrs)

Unit-07: Yoga and Mental Health: (5 Hrs)

- i. Total integration of personality
- ii. Correct mental behavior and attitude
- iii. Hormonal relationship of body and mind
- iv. Self-content tranquilizing effect
- v. Psychology of spiritual growth and spiritual values

- vi. Reasoning and judgment, pure consciousness, mode of living and disciplined life

Unit-8: Stress management through *Yoga*

(5 Hrs)

PRACTICAL (BNYS 403 P)

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

(100 Hrs)

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* publication

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 (BNYS 404 T)

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 hydiatic 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
 - b. Hot Douche
 - j. Fan Douche
 - k. Rain or Shower 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
- 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 (BNYS 404 P)

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 (BNYS 405 T)

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
- v. Electromagnetic induction
 - a. Principle and working of choke
 - b. Coil
 - c. Transformer
- 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

- c. Shaw rule
- d. Maxwell's corkscrew rule
- d. Rectification of AC to DC
- e. Metal oxide rectifier

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)

(20 Hrs)

- i. Interrupted/modified DC
- 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.

Theory Paper (BNYS406 T)

Part A: First Aid

Unit-1: Principles of First Aid & Resuscitation Techniques. (10 Hrs)

- 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 Hrs)

- 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 Hrs)

- 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 Hrs)

- 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 Hrs)

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 Hrs)

Acute Respiratory Failure, Status Asthmaticus, Spontaneous Pneumothorax and Hemoptysis, Pneumonia, ARDS.

Unit-7: Gastrointestinal Emergencies (10 Hrs)

Acute Gastroenteritis, Acute Vomiting, Biliary Colic, Acute Diarrhoea, Acute hepatic failure, Perforated Peptic Ulcer, Hematemesis, Hepatic Pre-Coma & Coma, Acute Pancreatitis.

Unit-8: Neurological Emergencies (10 Hrs)

Management of an unconscious Patient, Cerebrovascular Catastrophes – Embolic, Hemorrhagic and Convulsions & Status Epilepticus, GBS, TIA.

Unit-9: Renal Emergencies (10 Hrs)

Acute Renal Failure, Renal Colic, Hematuria, Hyperkalemia, Hypokalemia, Hyponatremia

Unit-10: Endocrinological Emergencies**(10 Hrs)**

Hypoglycemia, Diabetic Ketoacidosis, Myxedema Coma, Thyrotoxic Crisis & Adrenal Crisis, Hypercalcemia, Hypocalcemia.

PRACTICALS (BNYS 406 P)

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 (BNYS 407 T)

Unit-1:

- | | | |
|------|-------------------------------------|----------------|
| I. | Good Clinical Practice | (3 Hrs) |
| | a. Guidelines and Standards | |
| II. | Healing crisis and Disease crisis | (6 Hrs) |
| III. | Decision-making in Naturopathy | (3 Hrs) |
| IV. | Screening and Prevention of Disease | (8 Hrs) |
| | a. Basic principles of screening | |
| | b. Basic Principles of prevention | |
| V. | Scope of practice | (6 Hrs) |
| | a. Patterns of use | c. Regulations |
| | b. Fields of practice | d. Limitations |

Unit-2: Dictum of cure in Naturopathic medicine (10 Hrs)

- a. Identify and remove the root cause
- b. Eliminate the toxins
- c. Supplement of the vital energy or nerve energy

Unit-3 : Naturopathic Pathophysiology (12 Hrs)

Unit-4: Approach to the patient in Naturopathic medicine with: (40 Hrs)

- | | |
|---|-------------------------|
| a. Skin disease | f. Neurological disease |
| b. Cardiovascular disease | g. Renal disorders |
| c. Disease of respiratory system | h. Endocrine disorders |
| d. Gastrointestinal disorders | i. Menstrual disorders |
| e. Liver and pancreatic disease | j. Cancer |
| f. Articular and musculoskeletal disorder | |

Unit-5: Naturopathic prescription-making and algorithmic line of management for the following condition. (50 Hrs)

Abscess, Acid-Peptic Disease, Acne, Acute Abdomen, AIDS, Aging, Allergies, Alopecia, Alzheimer's disease, Anal fissures, Anemia, Anorexia nervosa, Anxiety disorders, Appendicitis, Arthritis – OA & RA, Asthma, ADD/ADHD, Back pain, Bronchitis, Bruise, Bursitis, Dental caries, Cardiovascular disease, Cerebrovascular disease, Chlamydia, Chloasma (Age spots), Chronic fatigue syndrome, Cirrhosis, Common cold, Colic, Colitis, Nasal congestion, Conjunctivitis, Constipation, Crohn's disease, Cuts (cuts, wounds and scratches), Cyst, Cystitis, Dandruff, Deep vein thrombosis, Clinical depression, Dermatitis, Diabetes, Diarrhea, Diverticulitis, Duodenal ulcer, Dysmenorrhea, Dyspepsia, Diabetes mellitus, Earwax blockage, Eczema, Edema, Emphysema, Endometriosis, Epilepsy, Erectile dysfunction, External otitis, Fainting, Fatigue, Fever, Fibromyalgia, Flatulence, Flu, Folliculitis, Food poisoning, Gallstones, Gastroenteritis, Gingivitis, Goiter, Gout, Halitosis, Headache, Heat stroke, Hemorrhoids, Hepatitis, Hernia, Herpes (genital), Obesity, Oligo menorrhea, Ovarian cyst, Parkinson's disease, PID, Phlebitis, PMS, Postnasal drip, Pressure Ulcers, PTSD, Rashes (hives), Raynaud's disease, Sciatica, Seasonal Affective Disorder, Seizure disorder, Sinusitis, Snoring, Sore throat, Scoliosis, Sprains.

Unit-6 : Naturopathy in management of

I.	Management of pain	(12 Hrs)
●	Pain sensory systems	
●	Chronic pain	
●	Types of pain	
a.	Chronic discomfort and palpitation	
b.	Abdominal pain	
c.	Headache	
d.	Back, neck pain	
II.	Fever, hyperthermia, fever with rashes	(8 Hrs)
III.	Hypothermia & frostbite	(4 Hrs)
IV.	Syncope, faintness, dizziness, vertigo	(4 Hrs)
V.	Sleep disorders	(6 Hrs)
VI.	Dyspnea, cough	(3 Hrs)
VII.	Edema	(2 Hrs)
VIII.	Dysphasia, nausea, vomiting and indigestion	(4 Hrs)
IX.	Diarrhea, constipation	(2 Hrs)
X.	Anorexia, Weight loss	(3 Hrs)
XI.	Sexual dysfunction	(3 Hrs)
XII.	Naturopathy in Pregnancy	(2 Hrs)
XIII.	Naturopathy in Pediatrics	(3 Hrs)
XIV.	Naturopathy in Geriatrics	(3 Hrs)

Unit7 -Important modes and methods for natural rejuvenation

(3 Hrs)

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

PRACTICAL(BNYS 407 P)

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 (BNYS 408 T)

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(BNYS 408 P)

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).