

Ordinance & Syllabus

for

Bachelor in Physiotherapy



Atal Bihari Bajpayee Medical University UP
2021

SYLLABUS- BACHELOR OF PHYSIOTHERAPY
ATAL BIHARI VAJPAYEE MEDICAL UNIVERSITY, UP, LUCKNOW

Dr. C. S. Ram
CDr. C. S. Ram

Dr. K. C. Choudhary
(Dr. K. C. Choudhary)

Dr. S. K. Singh
कुलपति
अटल बिहारी वाजपेयी चिकित्सा विश्वविद्यालय,
उत्तर प्रदेश, लखनऊ
Dr. S. K. Singh

These ordinances shall be called "The Ordinances & Regulations, Syllabus and Scheme of Examination pertaining to norms for the Bachelor of Physiotherapy course"

No. of Seats: Not more than 60 seats in a college.

No. of Physiotherapy Beds: The Bed: Student ratio in the College should be 1:3

HUMAN RESOURCES REQUIREMENT FOR COMMENCING BPT DEGREE PROGRAM:

Teaching faculty : Teacher student ratio must be (1:10) Teacher:Student.

Non Teaching Staff such as Librarian, Asst. Librarian, Clerk-2, Computer operator-1, Lab assistant for each Lab, Driver, Peon must be at least 7.

Pay Scales of Teaching and Non-Teaching Staff will be as per latest U.G.C Norms.


QUALIFICATIONS, EXPERIENCE AND OTHER ELIGIBILITY REQUIREMENTS FOR APPOINTMENT OF PHYSIOTHERAPY TEACHERS

I. ASSISTANT PROFESSOR: Bachelor's Degree in Physiotherapy (B.P.T./B.Th.P./B.P.Th.), Master's Degree in Physiotherapy (M.P.Th/M.Th.P./M.Sc. P.T/M.P.T./MSPT) with at least 55% marks (or an equivalent grade in a point scale wherever the grading system is followed) from a recognized University.

II. ASSOCIATE PROFESSOR: i) Essential: A Master's Degree in Physiotherapy (M.P.T./M.P.Th./M.Th.P/M.Sc. P.T./ MSPT) with eight years' experience as Assistant Professor. ii) Desirable: Higher Qualification, such as Ph.D. degree in any discipline of Physiotherapy recognised by the U.G.C, and published work of high standard in peer-reviewed or UGC - listed journals.

III. PROFESSOR: Essential: Master's Degree in Physiotherapy (M.P.T. / M.P.Th./M.Th.P./M.Sc. P.T./MSPT), with ten years' experience. Desirable: (i) Higher Qualification like Ph. D. in any subject of Physiotherapy recognised by U.G.C, and (ii) Published work of high standard in peer -reviewed or UGC- listed journals.

IV. PRINCIPAL /DEAN: Essential: Master's Degree in Physiotherapy (M.P.T./M.Th.P./M.Pth./M.Sc. P.T./MSPT) with fifteen years total teaching experience, (i) Senior-most Professor shall be designated as the Principal / Dean (Physiotherapy). (ii) Desirable: Higher qualification like Ph.D. in any subject of Physiotherapy recognized by the UGC and published work of high standard in peer reviewed or UGC listed journals.



Teachers and their Responsibilities : Whoever adopts teaching as a profession assumes the obligation to conduct himself / herself in accordance with the ideal of the profession. A teacher is constantly under the scrutiny of his students and the society at large. Therefore, every teacher should see that there is no incompatibility between his precepts and practice. The national ideals of education which have already been set forth and which he/she should seek to inculcate among students must be his/her own ideals. The profession further requires that the teacher should be calm, patient and communicative by temperament and amiable in disposition.

2. ACADEMIC FACILITIES:

A. **Academic Block:** The minimum required area in the academic block for urban areas is 4000 Sq Meter (43040 Sq Ft) and for rural areas is 8000 Sq Meter (86080 Sq Ft). In case of more than one course in that building there must be an additional 2000 Sq. meter more area per course.

Space allotment	Requirement per unit (sq.ft)	No. of Units	Total area required (sq. ft.)
*Department Office	500	1	500
* Principal's Office	300	1	300
* H.O. D's Office	200 x4	4	800
Professor's Office	200	4	800
Associate Professor's office	50	4	200
Assistant Professor's office	50 x 8	6+2	400

Common room for Staff	300	1	300
Seminar room/ Mini Auditorium	1200	1	1200
Conference Hall	2500	1	2500
Class Rooms (with LCD projector, Audio Visual aids).	1200	4	4800
Girls common room (with bed and attached washroom)	500	1	500
Boys Common room	200	1	200
Library with Reading Room	2500	1	2500
Discussions / Tutorial/ Interaction room	200	2	400
Hostel for Girls	Mandatory	Separate / shared with Medical College	
Hostel for Boys	Mandatory	Separate / shared with Medical College	

Out-door Physiotherapy department (Minimum 50 patients/day)	2500	1	2500
Gymnasium	1000	1	1000

Laboratories	Required in BPT Year	Minimum Required Area
Human Anatomy Lab	Ist year	1200 sq.ft
Human Physiology Lab	Ist year	1200 sq.ft
Biochemistry & Biophysics Lab	Ist year	1200 sq.ft
Electrotherapy Lab & Electro-diagnosis Lab	Ist & 2 nd year	1200 sq.ft.
Exercise Therapy Lab	Ist & 2 nd year	1200 sq.ft.
Biomechanics & kinesiology Lab /	Ist & 2 nd year	1200 sq.ft.
Dept. of Musculoskeletal Physiotherapy	III & IV yr	1200 sq.ft

Dept. of Neurophysiotherapy (seperate Paediatrics and adults sections)	III & IV yr	1200 sq.ft
Dept. of Cardio-respiratory Physiotherapeutics & ICU	III & IV yr	1200 sq.ft
Dept. of Sports Physiotherapy (Therapeutic Gymnasium, Exercise Fitness & Analysis Lab)	III & IV yr	1200 sq.ft
Dept. of Community Physiotherapy (with Mobile Physiotherapy Van) for i) women's health ii) ergonomics iii) health promotion iv) geriatrics.	III & IV yr	1200 sq.ft.

B. Hospital : Own hospital/ Attached hospital with 100 beds in which Orthopedic, Neurology, Cardiothoracic, ICU, Emergency and trauma, Gynaecology. Physiotherapy department is mandatory. Student: Patient Ratio in hospital and Physiotherapy OPD should be 1:5. In case of an attached hospital there should be a maximum distance of 5 Km from the academic block of the College. The college must have its own/ tie-up with at least five PHCs/NGOs/Special Schools for Community based rehabilitation training.

Selection procedure:

1. He/she has passed the Higher Secondary (10+2) or equivalent examination recognized by any Indian University or a duly constituted Board with 50% in physics, chemistry and biology (botany & zoology), i.e –Physics, chemistry and biology as major subjects) for General Category.
2. He/she has passed the Higher Secondary (10+2) or equivalent examination recognized by any Indian University or a duly constituted Board with 45% in physics, chemistry and biology (botany & zoology), i.e –Physics, chemistry and biology as major subjects) for SC/ST Category.
3. Candidates who have passed the Senior Secondary school Examination of National Open School.
 - a. Physics, Chemistry, Botany, Zoology.

b. Must pass in English.

4. He/she has attained the age of 17 years as on-current year

5. Admission will be done through a common entrance test at the State Level /or through score of a National Level Entrance Exam on merit basis. The candidate must obtain at least 50% marks in the entrance examination to get admission.

Reservation for disability: 5% percent Horizontal reservation will be considered for disable candidates with a disability of loco-motor to the tune of 40% to 50% the lower extremity and other eligibility criteria with regard to qualification will be same as prescribed for unreserved category candidates.

Cast Certificate: Cast certificate issued by only the competent authority (Tehsildar) of Uttar Pradesh are acceptable.

Duration of the course

Duration of the course shall be 4 ½ years (4 years annual examination pattern + 6 months internship). (Total of 4320 hours in theory, practical & clinical) and minimum 960 hours of internship (to be completed in six months duration).

Minimum Course Total hours- 5280

Medium of instruction:

English shall be the medium of instruction for all the subjects of study and for examination of the course.

Attendance:

A candidate has to secure minimum-

1. 75% attendance in theoretical lectures
2. 85% in Skills training (practical) for qualifying to appear for the final examination

No relaxation, whatsoever, will be permissible to this rule under any ground including in medical illness /disposition etc.

Assessment:

Assessments should be completed by the academic staff, based on the compilation of the student's theoretical & clinical performance throughout the training program. To achieve this, all assessment forms and feedback should be included and evaluated.

The passing marks for every subject in the year should be 50% marks in theory and practical considered separately.

Skill based Outcomes and Monitorable Indicators

Competency Statements to be tested through written and practical examinations

1. Consults with the client to obtain information about his/her health, associated history, previous health interventions, and associated outcomes.
2. Collects assessment data relevant to the client's needs and physiotherapy practice.

3. Be able to conduct the patient evaluation and assessment as per condition.
4. Analyzing Assessment findings & Establish a physiotherapy diagnosis and prognosis.
5. Develops and Recommends an intervention strategy.
6. Be able to prepare the patient (physically and emotionally) and as well as the equipment to be used as per treatment plan
7. Implements intervention.
8. Be able to accurately explain the treatment plans and able to demonstrate and teach self exercises
9. Advise patient on appropriate nutrition, exercises, rest, relaxation other issues
10. Evaluates the effectiveness of interventions.
11. Be able to complete accurate treatment documentation.
12. Develops, builds, and maintains rapport, trust, and ethical professional relationships through effective communication.
13. Establishes and maintains inter professional relationships, which foster effective client-centered collaboration.
14. Understand the principles of continuous quality improvement.
15. Be able to carry out the daily/weekly Quality Control (QC) checks.
16. Be able to review the literature.
17. Be able to suggest implementation of research findings.
18. Be able to suggest/ initiate topics for physiotherapy research
19. Be able to interpret, apply and disseminate information as a member of the profession.

Learning Outcomes, Knowledge/Comprehension, Application/Synthesis/Evaluation (Reference: MODEL CURRICULUM HANDBOOK OF PHYSIOTHERAPY drafted by Min. of Health & Family Welfare, Govt. of India 2015-16)

Sl No	Learning Outcomes	Knowledge/ Comprehension	Application/Synthesis/ Evaluation
1.	Consults with the client to obtain information about his/her health, associated history, previous health interventions, and associated outcomes	<ul style="list-style-type: none"> • Able to Collect and review background information relevant to the client's health. • Understands the client's expectations related to physiotherapy services. • Able to Collect and review health information about the client from other sources (e.g., other sources may include previous health records, other health care practitioners, 	<ul style="list-style-type: none"> • Develop rapport to obtain history and current health status • Use interviewing skills appropriate to the patient/client • Obtain a relevant history and current health status. • Interpret the patient's/client's verbal and non-verbal responses. • Determines the personality traits.

Sl No	Learning Outcomes	Knowledge/ Comprehension	Application/Synthesis/ Evaluation
		<p>professional colleagues, or family).</p> <ul style="list-style-type: none"> Identify client's prior functional abilities, physical performance, and participation. Identifies the client's personal and environmental factors affecting his/her functional abilities, physical performance, and participation. 	<ul style="list-style-type: none"> Analyze how the differences in personality influence approach
2.	Collects assessment data relevant to the client's needs and physiotherapy practice.	<ul style="list-style-type: none"> Informs the client of the nature and purpose of assessment as well as any associated significant risk. 	<ul style="list-style-type: none"> Perform patient assessment technique which includes to know the condition and to gather information about his/her ailment. Monitors the client's health status for significant changes during the course of assessment and takes appropriate actions as required. Perform assessment procedure safely and accurately, taking into account client consent, known indications, guidelines, limitations and risk-benefit considerations.
3.	Be able to conduct the patient evaluation and assessment as per condition.	<ul style="list-style-type: none"> Be familiar with different assessment techniques. Able to examine higher motor functions, cranial nerves, ROM, MMT, Muscle tightness, muscle tone, myotome, sensory evaluation, balance, co-ordination, hand function, functional outcome measures, Physical fitness, cardio-respiratory evaluation, posture & gait. Be familiar with special tests. Basic knowledge on radiological findings & 	<ul style="list-style-type: none"> Safely and accurately examines and re-examines a patient using standardized measures. Apply pertinent tests and measurements. Interpret all assessment findings to allow for identification of the patients/client's impairments, activity limitations and participation restrictions.

SYLLABUS

ATAL BIHARI VAJPAYEE MEDICAL UNIVERSITY, UP, LUCKNOW

Sl No	Learning Outcomes	Knowledge/ Comprehension	Application/Synthesis/ Evaluation
		<p>other investigations.</p> <ul style="list-style-type: none"> • Demonstrate clinical reasoning with choice of assessment and examination procedures 	
4.	Analyzing assessment findings & Establish a physiotherapy diagnosis and prognosis.	<ul style="list-style-type: none"> • Identifies the nature and extent of the client's impairments, activity limitations, and participation restrictions within the context of the client's needs. • Identifies environmental and personal supports and barriers relevant to the patients. • Determines the relationship among the assessment findings. 	<ul style="list-style-type: none"> • Interpret findings and reach a differential diagnosis • Establishes a diagnosis for physiotherapy, identifies risks of care, and makes appropriate clinical decisions based upon the examination, evaluation and current available evidence. • Formulates a physiotherapy diagnosis based on the analysis of patients assessment findings. • Discusses physiotherapy diagnosis and prognosis with the patient & care givers
5.	Develops and recommends an intervention strategy.	<ul style="list-style-type: none"> • Establishes and prioritizes, with the patient, expected outcomes based on the assessment findings and evidence-informed practice. • Recommends a service approach consistent with the client's needs, goals and all available resources. • Discuss the current patient condition among multidisciplinary team 	<ul style="list-style-type: none"> • Establishes goals that are specific, measurable, action oriented, realistic, and time-specific. • Selects interventions that are evidence-based and consistent with the client's goals, general health status, functional needs, and assessment findings. • Identifies when physiotherapy services are not required or indicated and refers for other services as appropriate.
6.	Be able to prepare the patient (physically and emotionally) and as well as the equipment to be used as per treatment plan	Know the patient mental and physical condition	Operate the most appropriate equipment for the individual patient within the context of the protocol.
7.	Implements intervention	<ul style="list-style-type: none"> • Orients the client to the practice setting and 	<ul style="list-style-type: none"> • Performs physiotherapy interventions in accordance

SYLLABUS

ATAL BIHARI VAJPAYEE MEDICAL UNIVERSITY, UP, LUCKNOW

Sl No	Learning Outcomes	Knowledge/ Comprehension	Application/Synthesis/ Evaluation
		provides information about relevant service/policies (e.g., location, duration, frequency, cost; introduce client to all staff involved in their care: expected completion of service).	with client consent and in a safe and effective manner. <ul style="list-style-type: none"> Educates the client about health promotion, self-management, and relevant services with respect to his/her unique condition.
8.	Be able to accurately explain the treatment plans and able to demonstrate and teach self exercises	<ul style="list-style-type: none"> Discuss the importance of exercises and how it should be carried out Be familiar with the treatment plans for all patients on the treatment unit Identify the co-morbidities that will impact on patient condition Recognize if any adverse reactions is occurring 	<ul style="list-style-type: none"> Interpret the treatment plan and use the equipment accordingly Teach patients the exercise procedures and methods of doing them. Evaluate the patient's general condition prior to commencing the exercises. Analyze the information and integrate to define the optimal patient condition
9.	Advise patient on appropriate nutrition, exercises, rest, relaxation other issues	<ul style="list-style-type: none"> Explain the impact of exercise and nutritional status of patient during treatment 	<ul style="list-style-type: none"> Assess the patient's status after exercise and proper diet.
10.	Evaluates the effectiveness of interventions.	<ul style="list-style-type: none"> Discuss with the client, the nature, purpose and results of ongoing assessment and outcome evaluations. Consults with the patient to redefine goals and modifies or discontinues intervention strategies as necessary. 	<ul style="list-style-type: none"> Monitors client responses and changes in status during the interventions and modifies intervention accordingly. Evaluates effectiveness of the intervention strategy on an ongoing basis using appropriate outcome measures. Assesses client status prior to the completion of physiotherapy service and compares with initial assessment findings. Communicates with the client about service completion & recommends self-management option.
11.	Be able to complete accurate treatment documentation.	<ul style="list-style-type: none"> Recognize the importance of accurate transfer of information to allow for 	<ul style="list-style-type: none"> Ensure that the ethical and legal requirements of documentation are

Sl No	Learning Outcomes	Knowledge/ Comprehension	Application/Synthesis/ Evaluation
		<p>accurate treatment set-up according to the treatment plan and prescription.</p> <ul style="list-style-type: none"> • Know what should be included & whom or where the documentation and information should be sent. • Be aware of the ethical issues relating to documentation 	<p>completed.</p> <ul style="list-style-type: none"> • Ensure legible, accurate and timely records are maintained. • Ensure statistical information is recorded and accessible.
12.	Develops, builds, and maintains rapport, trust, and ethical professional relationships through effective communication.	<ul style="list-style-type: none"> • Be familiar with the psychological status of the patient. • Knowledge of few counseling procedures. 	<ul style="list-style-type: none"> • Demonstrates sensitivity to the uniqueness of others. • Listens effectively and facilitates discussion to ensure reciprocal exchange of information. • Demonstrates an awareness of self behaviours and the responses of others and adapts communications appropriately. • Able to assess psychological status of patient.
13.	Establishes and maintains inter professional relationships, which foster effective client-centered collaboration.	<ul style="list-style-type: none"> • Integrates knowledge and understanding of the physiotherapist role and the roles of others in providing client-centred care. • Consults and shares relevant information with clients, other health professionals, and all relevant individuals or groups in a timely manner. 	<ul style="list-style-type: none"> • Demonstrates an understanding of and respects the roles, responsibilities and differing perspectives of team members. • Practice in accordance with legislation regulations and ethical guidelines. • Fosters collaboration with relevant others.
14.	Understand the principles of continuous quality improvement	<ul style="list-style-type: none"> • Identify the components of a quality plan. • Discuss the role of quality assurance such as principles of an accreditation/audit programme • Undertake peer review and self-evaluation 	<ul style="list-style-type: none"> • Modify and adapt professional practice in response to evaluation and/or feedback from the patient/client, peer, supervisor Contribute to in-service activities • Reflect on the outcomes of interventions and modify practice accordingly
15.	Be able to carry	<ul style="list-style-type: none"> • Explain Quality 	<ul style="list-style-type: none"> • Perform the

Sl No	Learning Outcomes	Knowledge/ Comprehension	Application/Synthesis/ Evaluation
	out the daily/ weekly Quality Control (QC) checks	Management System (QMS), Quality Assurance (QA) and Quality Control (QC)	daily/weekly/monthly QC procedures
16.	Be able to review the literature	<ul style="list-style-type: none"> Define search terms for specific treatment sites 	<ul style="list-style-type: none"> Identify the appropriate literature in the area of interest. Identifying research gap.
17.	Be able to suggest implementation of research findings	<ul style="list-style-type: none"> Identify relevant sources of Research 	<ul style="list-style-type: none"> Evaluate research with respect to current departmental practice
18.	Be able to suggest/ initiate topics for physiotherapy research	<ul style="list-style-type: none"> Identify literature to support research proposal Define the necessary steps in preparing and carrying out research 	<ul style="list-style-type: none"> Review the literature in the area. Formulate a research question. Conducts research systematically.
19.	Be able to interpret, apply and disseminate information as a member of the physiotherapy team	<ul style="list-style-type: none"> Define and explain the data that must be disseminated 	<ul style="list-style-type: none"> Identify the appropriate personnel to whom specific information should be disseminated. Communicate the correct, relevant and appropriate information

Syllabus

For

Bachelor in Physiotherapy



Atal Bihari Vajpayee Medical University UP
From session 2021-2022

(Handwritten signatures in blue, black, and green ink)

Introduction:

Learning Objectives: At the completion of this course, the student should be-

1. The purpose of this curriculum is to delineate the cognitive, affective and psychomotor skills deemed essential for completion of this program and to perform as a competent physiotherapist who will be able to examine, evaluate, diagnose, plan, execute and document physiotherapy treatment independently or along with the multidisciplinary team.
2. Evaluate patients for impairments and functional limitations and be able to execute all routine physiotherapeutic procedures as per the evaluation.
3. Able to operate and maintain physiotherapy equipment used in treatment of patients, physiotherapy treatment planning (both electrotherapy and exercise therapy) & procedures independently.
4. Able to provide patient education about various physiotherapeutic interventions to the patient and care givers.

Program Objectives-

1. Course work entitles independent physiotherapy assessment and treatment in any health care delivery centers in India by the graduates.
2. The coursework is designed to train students to work as independent physiotherapists or in conjunction with a multidisciplinary team to diagnose and treat movement disorders as per red and yellow flags.
3. Course work will enlighten the skill of the graduate's physical/functional diagnosis, treatment planning, management, administration of physiotherapy treatment, and patient support.
4. Graduates can find employment opportunities in hospitals/nursing homes/sports teams/fitness centers/Community Rehabilitation/Health planning boards/health promotions services in both private and public sectors as well as in independent physiotherapy clinics.
5. Physiotherapy graduates are encouraged to pursue further qualification to attain a senior position in the professional field and also to keep abreast with the recent advances, new technology and research. The professional should opt for continuous professional education credits offered by national and international institutes.

BPT Graduate Attributes:

1. The graduate will be a competent and reflective physiotherapy practitioner who can function safely and effectively while adhering to legal, ethical, and professional standards of practice in a multitude of physiotherapy settings for patients and clients across the

lifespan and along the continuum of care from wellness and prevention to rehabilitation of dysfunction.

2. The graduate will utilize critical inquiry and evidence-based practice to make clinical decisions essential for autonomous practice.
3. The graduate will function as an active member of professional and community organizations. The graduate will be a service-oriented advocate dedicated to the promotion and improvement of community health.
4. The graduate will demonstrate life long commitment to learning and professional development.

Eligibility for admission:

Selection procedure:

1. He/she has passed the Higher Secondary (10+2) or equivalent examination recognized by any Indian University or a duly constituted Board with 50% in physics, chemistry and biology (botany & zoology), i.e –Physics, chemistry and biology as major subjects).
2. Candidates who have passed the Senior Secondary school Examination of National Open School. The candidate must pass in english.
 - a. Physics, Chemistry, Biology (Botany+ Zoology considered as a combined)
 - b. Physics, Chemistry, Biology.
3. He/she has attained the age of 17 years as on 31st December of that year.
4. Admission will be done through a common entrance test at the State Level /or through score of a National Level Entrance Exam on merit basis.

Duration of the course

Duration of the course shall be 4 ½ years (4 years annual examination pattern + 6 months internship). (Total of 4320 hours in theory, practical & clinical) and minimum 960 hours of internship (to be completed in six months duration).

Total hours- 5280

Medium of instruction:

English shall be the medium of instruction for all the subjects of study and for examination of the course.

Attendance:

A candidate has to secure minimum-

1. 75% attendance in theoretical
2. 85% in Skills training (practical) for qualifying to appear for the final examination

No relaxation, whatsoever, will be permissible to this rule under any ground including in medical illness /disposition etc.

Assessment:

Assessments should be completed by the academic staff, based on the compilation of the student's theoretical & clinical performance throughout the training program. To achieve this, all assessment forms and feedback should be included and evaluated.

The passing marks for every subject in the year should be 50% marks in theory and practical considered separately.

EVALUATION SCHEME

BPT FIRST YEAR

S.NO	Course	Course Code	Theory		Practical		Total
			Internal	External	Internal	External	
1	Human Anatomy (Including Applied Anatomy)	BPT-101	20	80	20	80	200
2	Human Physiology (Including Applied Physiology)	BPT-102	20	80	20	80	200
3	Biochemistry & Bio physics	BPT-103	20	80	20	80	200
4	Health Psychology	BPT-104	20	80	-	-	100
5	Yoga-Basic theory, science and techniques	BPT-105	20	80	-	-	100
6	First Aid & Emergency Care	BPT-106	20	80	-	-	100
Non University Exam Subjects							
7	Remedial English	BPT-107	-	-	-	-	-
8	Computers & Informatics	BPT-108	-	-	-	-	-
9	Environmental Science	BPT -109	-	-	-	-	-
Total			120	480	60	240	900

BPT SECOND YEAR

S.NO	Course	Course Code	Theory		Practical		Total
			Internal	External	Internal	External	
1	Exercise Therapy-I	BPT-201	20	80	20	80	200
2	Electrotherapy-I	BPT-202	20	80	20	80	200
3	Biomechanics and Kinesiology	BPT-203	20	80	20	80	200
4	Pathology	BPT-204	20	80	-	-	100
5	Microbiology	BPT-205	20	80	-	-	100
6	Pharmacology	BPT-206	20	80	-	-	100
Non University Exam Subjects							
7	Medical/Physiotherapy Ethics & Laws	BPT-207	-	-	-	-	-
8	Introduction to Health Care Systems	BPT-208	-	-	-	-	-
9	Clinical Education	BPT-209	-	-	-	-	-
Total			120	480	60	240	900

BPT THIRD YEAR

S.NO	Course	Course Code	Theory		Practical		Total
			Internal	External	Internal	External	
1	Exercise Therapy II	BPT-301	20	80	20	80	200
2	Electrotherapy II	BPT-302	20	80	20	80	200
3	Clinical Orthopaedics and Diagnostic imaging	BPT-303	20	80	20	80	200
4	General Medicine and General Surgery	BPT-304	20	80	-	-	100
5	Neurology and Neuro Surgery	BPT-305	20	80	-	-	100
6	Cardiology and Pulmonology	BPT-306	20	80	-	-	100
7	Research Methodology	BPT-307	20	80	-	-	100
Non University Exam Subjects							
8	Introduction to Quality & Patient Safety	BPT-308	-	-	-	-	-
9	Professionalism & Values	BPT-309	-	-	-	-	-
10	Clinical Education	BPT -310	-	-	-	-	-
Total			140	560	60	240	1000

BPT FOURTH YEAR

S.NO	Course	Course Code	Theory		Practical		Total
			Internal	External	Internal	External	
1	Physiotherapy in Orthopaedics	BPT-401	20	80	20	80	200
2	Physiotherapy in Neurology	BPT-402	20	80	20	80	200
3	Physiotherapy in Cardiopulmonary & ICU	BPT-403	20	80	20	80	200
4	Physiotherapy in General Medicine and General surgery	BPT-404	20	80	20	80	200
5	Physiotherapy in Sports	BPT-405	20	80	20	80	200
6	Community Physiotherapy and Rehabilitation	BPT-406	20	80	-	-	100
7	Research Project	BPT-407	20	80	-	-	100
Non University Exam Subjects							
8	Evaluation Methods and Outcome Measures	BPT-408	-	-	-	-	-
9	Clinical reasoning & Evidence based physiotherapy	BPT-409	-	-	-	-	-
10	Critique inquiry, case presentation and discussion.	BPT410	-	-	-	-	-
11	Clinical education	BPT-411	-	-	-	-	-
Total			140	560	100	400	1200

INTERNSHIP	Maximum Marks	Total Hour
6 Months	300	960

INTERNAL ASSESSMENT

It will be for theory and practical both. • It will be done through the whole year. Candidates must obtain at least 35% marks in theory and practicals separately in internal assessment to be eligible for the annual university examination.

• Internal assessment (Theory) will be done as follows :

- a) Mid-term and term examinations = 10 marks
- b) Assignments/Projects/Class test/Clinical Presentations = 05 marks
- c) Attendance = 05 marks

Total = 20 marks

Internal assessment (Practical) will be done as follows :

- a) Laboratory manual = 10 marks
- b) Day to day performance = 05 marks
- c) Attendance = 05 marks

Total = 20 marks

Internal assessment of subjects without practicals will be done as :

- a) Mid-term and term examinations = 10 marks
- b) Assignments/Projects/Class test/Clinical Presentations = 05 marks
- c) Attendance = 05 marks

Total = 20 marks

Commencement of the course-

The course shall commence no later than 1st October in a calendar year.

Commencement of examination-

University examinations will be conducted two time in the years mains and supplementary.

Working days during the year-

Each year shall consist not less than 180 working days excluding examination days.

Marks qualifying for pass-

50% marks in theory and practical marks separately is required.

Promotion criteria

Students may be promoted to next year only if the number of the failed subjects is two or less than two. Students must clear these subjects along with appearing for the University examination of subsequent years. Only after passing all the subjects in all years will he/she be allowed to undergo internship.

Grace Marks- Grace marks will be given 5 marks in one subject only in the annual examination. If the candidate will fail in more than 01 subject, the grace marks will not be applicable.

Review of answer papers of failed candidates-

As per the regulations prescribed for review of answer papers by the University.

Maximum duration of the program-

Candidates should complete the Bachelor of Physiotherapy degree course within a period of 9 (nine) years from the date of joining in the course.

Discharge from the program-

1. "If a student admitted to a course of study in an University and for any reason not able to complete the course or qualify for the degree by passing the examinations prescribed within a period comprising twice the duration prescribed in the Regulations for the concerned course, he/she will be discharged from the said course, his/her name will be taken off the rolls of the University and he/she will not be permitted to attend classes or appear for any examination conducted by the University there after."
2. "In respect of courses where internship is prescribed and if a student is for any reason not able to complete the internship within a period comprising twice the duration prescribed in the Regulations for the concerned course, such cases will be placed before a Committee to be constituted by the Vice-Chancellor for making appropriate decision on a case to case basis, based on individual merits.
3. "The course of study shall mean and include all the undergraduate, postgraduate diploma/degree broad and super specialty courses in medical and all the other Faculties of the University".
4. The above Regulations shall be applicable to all students already admitted and to be admitted to a course of study in a University."
5. "Notwithstanding anything contained in the foregoing, the students who fall in the category clause I above and who are in the final year of the respective courses be given one more last and final chance to appear for the University Examination with a condition that if they do not pass the examination even in their last chance, they shall be discharged from the course. The Controller of Examinations will admit such candidate to the University examinations only after their producing an undertaking (as perform at given in student's manual) to this effect."

Internship-

All students of Bachelor of Physiotherapy must undergo a compulsory rotatory internship for a continuous period of 6 months approved by the college after passing all examinations in all subjects. Internship should be done in a minimum 100 bedded government recognized hospital. The ratio of patients to intern shall be 5:1.

Classification of successful candidates -

A successful candidate

1. Who secures 75% and above in the aggregate marks shall be declared to have secured 'FIRST DIVISION WITH DISTINCTION' provided he/she passes the whole examination in the FIRST ATTEMPT; Who secures above 60% and less than 75% in the aggregate marks and completes the course within the stipulated course period shall be declared to have passed the examinations in the 'FIRST DIVISION, provide he/she passes the whole examination in the FIRST ATTEMPT';
2. Who secures above 50% and less than 60% in the aggregate marks and completes the course within the stipulated course period shall be declared to have passed the examinations.



Curriculum Scheme

First Year

Sl. No.	Course Titles	Hours			Credit hours
		Theory	Practical	Total	
BPT-101	Human Anatomy (Including Applied Anatomy)	110	100	210	9
BPT-102	Human Physiology (Including Applied Physiology)	100	100	200	8
BPT-103	Biochemistry & Bio physics	100	50	150	6
BPT-104	Health Psychology	100	-	100	4
BPT 105	Yoga-Basic theory, science and techniques	50	30	80	3
BPT-106	First Aid & Emergency Care	50	30	80	3
	Non University exam Subjects				
BPT-107	Remedial English	30	-	30	1
BPT-108	Computers & Informatics	30	30	60	3
BPT-109	Environmental Science	30		30	1
	Total	600	340	940	38

Second Year

Sl. No.	Course Titles	Hours			Credit hours
		Theory	Practical	Total	
BPT-201	Exercise Therapy-I	100	150	250	9
BPT-202	Electrotherapy-I	100	150	250	9
BPT-203	Biomechanics and Kinesiology	100	100	200	8
BPT-204	Pathology	100	50	150	4
BPT-205	Microbiology	100	50	150	4
BPT-206	Pharmacology	75	-	75	3
	Non-University Exam Subject				
BPT-207	Medical/Physiotherapy Law and Ethics	30		30	1
BPT-208	Introduction to Health Care System	30		30	1
BPT-209	Clinical Education		120	120	4
	Total	635	620	1255	43

Third Year

Sl. No.	Course Titles	Hours			Credit hours
		Theory	Practical	Total	
BPT-301	Exercise Therapy -II	100	150	250	9
BPT-302	Electrotherapy-II	100	150	250	9
BPT-303	Clinical Orthopedics & Diagnostic imaging	100	50	150	4
BPT-304	General Medicine & General Surgery	100	30	130	3
BPT-305	Neurology and Neurosurgery	100	30	130	3
BPT-306	Cardiology and Pulmonology	100	30	130	3
BPT-307	Research Methodology and Biostatistics	70		70	3
	Non-University Exam Subjects				
BPT-308	Introduction to Quality & Patient Safety	15		15	1
BPT-309	Professionalism & Values	10		10	1
BPT-310	Clinical education		400	400	9
	Total	695	840	1535	45

Fourth Year

Sl. No.	Course Titles	Hours			Credit hours
		Theor y	Practic al	Total	
BPT-401	Physiotherapy in Orthopaedics	80	80	160	5
BPT-402	Physiotherapy in Neurology	80	80	160	5
BPT-403	Physiotherapy in Cardiopulmonary & ICU	80	80	160	5
BPT-404	Physiotherapy in General Medicine and General Surgery	80	80	160	5
BPT-405	Physiotherapy in Sports	80	80	160	5
BPT-406	Community Physiotherapy & Rehabilitation	80	80	160	5
Non-University Exam Subjects					
BPT-407	Critique inquiry, case presentation and discussion.	30	30	60	2
BPT-408	Evaluation Methods and Outcome Measures	30	30	60	2
BPT-409	Clinical reasoning & Evidence based physiotherapy	30	30	60	2
BPT-410	Communication & Soft Skill Development	10	20	30	1
BPT-411	Clinical education and Research Project		400	400	9
	Total	580	990	1570	46

Internship

Sl. No.	Course Titles	Hours			Credit hours
		Theory	Practical /Clinical	Total	
	Internship		960	960	16
	Total			960	

INTERNSHIP–Minimum 960 hours (calculated based on 8 hours per day,)

There shall be six months of Internship after the final year examination for candidates declared to have passed the examination in all the subjects. During the internship candidate shall have to work full time average 8 hours per day (each working day) for 6 Calendar months. Each candidate is allowed a maximum of 6 holidays during the entire Internship Program and in case of any exigencies during which the candidate remains absent for a period more than 6 days, he/she will have to work for the extra days during which the candidate has remained absent.

The Internship should be rotatory and cover clinical branches concerned with Physiotherapy such as

Orthopaedics -1 mth

ICU - 1 mth

Neurology, Neurosurgery -1mth

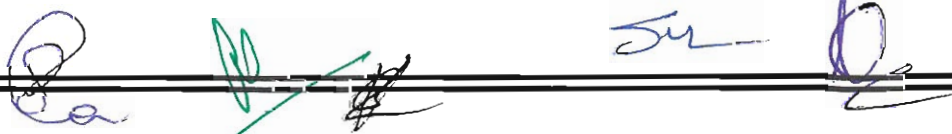
Paediatrics and Medicine- 1 mth

General Surgery and Obstetrics and Gynaecology -1 mth

CTVS + Plastic Surgery - 1 mth

The posting should be both inpatient and outpatient services. The student has to maintain a log book and it should be duly signed by the concerned clinical supervisor on a daily basis. The log book should also include six case studies from respective departments. Based on the attendance and work done during posting the Director/Principal/ head of institution/department shall issue 'Certificate of Satisfactory completion' of training following which the University shall award the Bachelor of Physiotherapy Degree or declare the candidate eligible for the same. No candidate shall be awarded a degree without successfully completing a six months internship. Institutions shall have to satisfy themselves that satisfactory infrastructure facilities of Physiotherapy exist in the Institute / Hospital where the internship training has to be undertaken. Following parameters / guidelines have been suggested:

- a. It is mandatory for the Institution to have its own Physiotherapy clinic fully furnished with all the necessary equipment as per the curriculum of the Program.
- b. Senior Physiotherapists with sufficient clinical experience should manage the physiotherapy departments in the Institutes/Hospitals.
- c. Institute Director / Principal can at his discretion grant NOC to the students to do the Internship at the place of his/her choice provided the concerned Hospital fully satisfies



the above criteria. For the purpose of granting NOC the candidate shall have to submit to the Institution the status of Physiotherapy services available at the place where he/ she intends to do Internship.

The Internship is continuously evaluated and marks are awarded at the end of Internship for a total of 300 marks (50 marks/Month/Departmental Posting). The marks are awarded by the Clinical supervisor/ HOD of the concern department. The marks awarded shall be submitted to the examination department within one week from the day of completion of internship.

BPT FIRST YEAR

HUMAN ANATOMY (Including Applied Anatomy)

SUBJECT DESCRIPTION- It is designed to provide students with the working knowledge of the structure of the human body which is an essential foundation for their clinical studies.

THEORY-

1. General Anatomy

- a. Introduction and subdivisions of Anatomy.
- b. Anatomical nomenclature: Terms of Planes, Positions, Body parts and movements.
- c. Basic tissues of the body: Definition, location and their function
- d. Structure and appendages of skin
- e. Superficial & deep fascia: Definition and functions, modifications of deep fascia

2. General Histology and Embryology

- a. Epithelium, Connective Tissue
- b. Muscle, bone and Cartilage
- c. Nerve and Vessels
- d. Development of skin fascia and blood vessels
- e. Development of Endo, Exoskeleton, neural tube and spinal cord

3. Regional Anatomy

a. Thorax:

- i. Cardio-Vascular System Mediastinum: Divisions and contents
Pericardium: Thoracic Wall: position, shape and parts of the heart; conducting System; blood Supply and nerve supply of the heart; names of the blood vessels and their distribution in the body region wise.
- ii. Respiratory system- Outline of respiratory passages: Pleura and lungs: position, parts, relations, blood supply and nerve supply; Lungs – emphasize on bronchopulmonary segments.
- iii. Diaphragm: Origin, insertion, nerve supply and action, openings in the diaphragm.
- iv. Intercostal muscles and Accessory muscles of respiration: Origin, insertion, nerve supply and action.
- v. Applied Anatomy: Diaphragmatic Hernia, Applied anatomy of respiratory system, Applied anatomy of circulatory system, Applied anatomy of trachea and oesophagus

b. Abdomen:

- vi. Peritoneum: Parietal peritoneum, visceral peritoneum, folds of peritoneum, functions of peritoneum.
- vii. Large blood vessels of the gut.

Location, size, shape, features, blood supply, nerve supply and functions of the following: stomach, liver, spleen, pancreas, kidney, urinary bladder, intestines, gallbladder.

- b. Pelvis: Position, shape, size, features, blood supply and nerve supply of the male and female reproductive system.
- c. Endocrine glands: Position, shape, size, function, blood supply and nerve supply of the following glands: Hypothalamus and pituitary gland, thyroid glands, parathyroid glands, Adrenal glands, pancreatic islets, ovaries and testes, pineal glands, thymus.
- d. Applied Anatomy: Abdominal Hernia, Congenital anomalies, Clinical significance of 9 regions of abdomen, Surgical incisions, Applied anatomy of visceral organs

4. Musculoskeletal Anatomy- (All the topics to be taught in detail)

- a. Connective tissue classification.
- b. Bones- Composition & functions, classification and types according to Morphology and development.
- c. Joints- definition, classification, structure of fibrous, cartilaginous joints, blood supply and nerve supply of joints.
- d. Muscles- origin, insertion, nerve supply and actions.
- e. Upper Extremity
 - i. Osteology: Clavicles, Scapula, Humerus, Radius, Ulna, Carpals, Metacarpals, Phalanges.
 - ii. Soft parts: Breast, pectoral region, axilla, front of arm, back of arm, cubital fossa, front of forearm, back of forearm, palm, dorsum of hand, muscles, nerves, blood vessels and lymphatic drainage of upper extremity.
 - iii. Joints: Shoulder girdle, shoulder joint, elbow joints, radioulnar joint, wrist joint and joints of the hand.
 - iv. Arches of hand, skin of the palm and dorsum of hand.
 - v. Applied Anatomy: Injuries related to dislocations/subluxation of joints of upper limb, Injuries related to fractures of bones of upper limb, entrapment neuropathies, Brachial plexus injury, Rotator cuff injuries, Injuries related to vascular supply of upper limb, Injuries related to nerve damage, Knowledge of ossification of bones of upper limb, Deformities, Anatomy related to surgical management of breast carcinoma. Knowledge of lymph nodes and lymph vessels and their pathology, Triangle of auscultation, Soft tissue injuries of upper limb, Capsular injuries, Venepuncture in cubital fossa, Reflexes, Contractures and Syndromes of upper limb and thorax

- f. Lower extremity
 - i. Osteology: Hip bone, femur, tibia, fibula, patella, tarsals, metatarsals and phalanges.
 - ii. Soft parts: Gluteal region, front and back of the thigh (Femoral triangle, femoral canal and inguinal canal), medial side of the thigh (Adductor canal), lateral side of the thigh, popliteal fossa, anterior and posterior compartment of leg, sole of the foot, lymphatic drainage of lower limb, venous drainage of the lower limb, arterial supply of the lower limb, arches of foot, skin of foot.
 - iii. Joints: Hip Joint, Knee joint, Ankle joint, joints of the foot.
 - iv. Applied Anatomy: Injuries related to dislocations/subluxation of joints of lower limb, Injuries related to fractures of bones of lower limb, anatomy of entrapment neuropathies, Injuries related to vascular supply of lower limb, Injuries related to nerve damage, Knowledge of ossification of bones of lower limb, Deformities, Soft tissue injuries of upper limb, Capsular injuries, Reflexes, Contractures and Syndromes of lower limb, Intramuscular injection.
- g. Trunk & Pelvis:
 - h. Osteology: Cervical, thoracic, lumbar, sacral and coccygeal vertebrae and ribs.
 - ii. Soft tissue: Pre and Para vertebral muscles, intercostals muscles, anterior abdominal wall muscles, Intervertebral disc.
 - iii. Pelvic girdle and muscles of the pelvic floor.
 - iv. Applied Anatomy: Injuries related to fractures, bony deformities, Spondylolisthesis, Spondylolysis, Spondylitis, Nerve entrapments, Spinal cord injuries: hemiplegia and paraplegia
- i. Head and Neck:
 - i. Osteology: Mandible and bones of the skull.
 - ii. Soft parts: Muscles of the face and neck and their nerve and blood supply- extraocular muscles, triangles of the neck.
 - iii. Gross anatomy of eyeball, nose, ears and tongue.
 - iv. Temporomandibular joints
- i. NeuroAnatomy- Organization of Central Nervous system- Spinal nerves and autonomic nervous system mainly pertaining to cardiovascular, respiratory and urogenital system
 - i. Cranial nerves
 - ii. Peripheral nervous system
 - iii. Neurons, classification with examples.

- iv. Simple reflex arc.
- v. Parts of a typical spinal nerve/Dermatome/Myotome/Sclerotome
- vi. Peripheral nerve
- vii. Neuromuscular junction
- viii. Sensory end organs
- ix. Central Nervous System
- x. Spinal cord segments in relation to vertebral column
- xi. BrainStem
- xii. Cerebellum
- xiii. Structure and features of meninges
- xiv. Inferior colliculi
- xv. Superior Colliculi
- xvi. Thalamus
- xvii. Hypothalamus
- xviii. Corpus striatum
- xix. Cerebral hemisphere
- xx. Lateral ventricles
- xxi. CSF circulation
- xxii. Blood supply to brain
- xxiii. Basal ganglia
- xxiv. The pyramidal system
- xxv. Pons, medulla, extra pyramidal systems
- xxvi. Anatomical integration

k. Surface Anatomy:

i. surface anatomy of the musculoskeletal system, group work in surface anatomy of the thorax, abdomen, neck, limbs, thorax and abdomen, the pelvic region.

l. Radiological Anatomy:

i. Radiological features of various soft tissues and bones are relevant to Head, Neck, Thorax, Abdomen, limbs and Pelvis.

PRACTICAL- List of Practical/Demonstrations

1. Upper extremity including surface Anatomy.
2. Lower extremity including surface Anatomy.
3. Head & Spinal cord and Neck and Brain including surface Anatomy.
4. Thorax including surface anatomy, abdominal muscles.
5. Histology- Elementary tissue including surface Anatomy.
6. Embryology- models, charts & X-rays.

HUMAN PHYSIOLOGY (Including Applied Physiology)

SUBJECT DESCRIPTION: The course in Physiology over the first year is designed to give the student an in-depth knowledge of fundamental reactions of living organisms, particularly in the human body.

THEORY

1. General Physiology

- a. Cell: Morphology, Organelles: their structure and functions
- b. Transport Mechanisms across the cell membrane
- c. Body fluids: Distribution, composition.

2. Blood

- a. Introduction: Composition and functions of blood.
- b. Plasma: Composition, formation, functions, Plasma proteins.
- c. RBC: count and its variations.
Erythropoiesis- stages, factors regulating.
Reticulo- endothelial system (in brief)
Haemoglobin – structure, function and derivatives
Anemia (in detail), types of Jaundice
Blood indices, PCV, ESR
- d. WBC: Classification, Morphology, functions, count, its variation of each
Immunity
- e. Platelets: Morphology, functions, count, its variations
- f. Hemostatic mechanisms: Blood coagulation – factors, mechanisms, their disorders, Anticoagulants.
- g. Blood Groups: Landsteiner's law, types, significance, determination, Erythroblastosis foetalis.
- h. Blood Transfusion: Cross matching, Indications and complications.
- i. Lymph: Composition, formation, circulation and functions.
- j. Applied Physiology: Thalassemia Syndrome, Hemophilia, VWF, Anemia, Leukocytosis, Bone marrow transplant, Oxygen debt.

3. Nerve Muscle Physiology

- a. Introduction: Resting membrane potential, Action potential – ionic basis and properties.
- b. Nerve: Structure and functions of neurons, Classification, Properties and impulse transmission of nerve fibers. Nerve injury – degeneration and regeneration.
- c. Neuroglia: Types and functions.
- d. Physiology of the Brain: Areas & Connections
- e. Sympathetic and Parasympathetic regulation, thermoregulation

- f. Peripheral nervous system
- g. Muscle: Classification, Skeletal muscle: Structure, Neuromuscular junction: Structure, Neuromuscular transmission,
- h. Applied Physiology: Muscles and Nervous System Functions, Types of nerve fibers, Action potential, Strength-duration curve, ECG, EMG, VEP, NCV, Degeneration and regeneration of nerve, Reactions of denervations, Synaptic transmission, Stretch reflex- Mechanism and factors affecting it, Posture, Balance and Equilibrium/Coordination of voluntary movement, Voluntary motor action, clonus, Rigidity, incoordination, Special senses- Vision, taste, hearing, vestibular, Olfaction, .myasthenia gravis. Excitation-Contraction coupling, Rigormortis.

4. Cardiovascular System

- a. Introduction: Physiological anatomy and nerve supply of the heart and blood vessels. Organisation of CVS, Cardiac muscles: Structure. Ionic basis of action potential and pacemaker potential, Properties.
- b. Conducting system: Components, Impulse conduction Cardiac Cycle: Definition, Phases of cardiac cycle. Pressure and volume curves. Heart sounds – causes, character, ECG: Definition, Different types of leads, Waves and their causes, P-R interval, Heart block.
- c. Cardiac Output: Definition, Normal value, Determinants, Stroke volume and its regulation, Heart rate and its regulation, their variations
- d. Arterial Blood Pressure: Definition, Normal values and its variations, determinants, Peripheral resistance, Regulation of BP.
- e. Arterial pulse.
- f. Shock– Definition, Classification, causes and features
- g. Regional Circulation: Coronary, Cerebral and Cutaneous circulation
- h. Applied Physiology: Circulatory adjustment in exercise and in postural and gravitational changes, Pathophysiology of fainting and heart failure, Cardiovascular changes during exercise.

5. Respiratory System-

- a. Introduction: Physiological anatomy– Pleura, tracheo-bronchial tree, alveolus, respiratory membrane and their nerve supply. Functions of respiratory system, Respiratory muscles.

- b. Mechanics of breathing: Intrapleural and Intrapulmonary pressure changes during respiration, Chest expansion, Lung compliance: Normal value, pressure-volume curve, factors affecting compliance and its variations, Surfactant – Composition, production, functions, RDS
- c. Spirometry: Lung volumes and capacities, Timed vital capacity and its clinical significance, Maximum ventilation volume, Respiratory minute volume.
- d. Dead Space: Types and their definition.
- e. Pulmonary Circulation Ventilation- perfusion ratio and its importance.
- f. Transport of respiratory gases: Diffusion across the respiratory membrane, Oxygen transport – Different forms, oxygen-haemoglobin dissociation curve. Factors affecting it. P50, Haldane and Bohr Effect, Carbon dioxide transport: Different forms, chloride shift.
- g. Regulation of Respiration: Neural Regulation, Hering-breuer's reflex, Voluntary control, Chemical Regulation.
- h. Applied Physiology: Hypoxia: Effects of hypoxia, Types of hypoxia, hyperbaric oxygen therapy, Acclimatization Hypercapnia, Asphyxia, Cyanosis– types and features, Dysbarism, Disorders of Respiration: Dyspnoea, Orthopnoea, Hyperpnoea, hyperventilation, apnoea, tachypnoea, periodic breathing- types Artificial respiration, Respiratory changes during exercise. Pulmonary Functions, Respiratory adjustments in exercises, Artificial respiration, Breath sounds.

6. Digestive System-

- a. Introduction: Physiological anatomy and nerve supply of alimentary canal, enteric nervous system.
- b. Salivary Secretion: Saliva: Composition, Functions, Regulation, Mastication (in brief)
- c. Swallowing: Definition, Different stages, Function.
- d. Stomach: Functions, Gastric juice: Gland, composition, function, regulation, Gastrin: Production, function and regulation, Peptic ulcer, Gastric motility, Gastric emptying, vomiting.
- e. Pancreatic Secretion: Composition, production, function, Regulation.
- f. Liver: Functions of liver, Bile secretion: Composition, functions and regulation, Gallbladder: Functions.
- g. Intestine: Succus entericus: Composition, function and regulation of secretion, Intestinal motility and its function and regulation.
- h. Mechanism of Defecation.

7. Renal System

- a. Physiology of kidney and urine formation.
- b. Glomerular filtration rate, clearance, Tubular function.

- c. Water excretion, concentration of urine regulation of Na⁺, Cl⁻, K⁺ excretion
- d. Physiology of urinary bladder
- e. Neural control of Micturition
- f. Applied physiology: Types of bladder

8. Male & Female Reproductive System Male

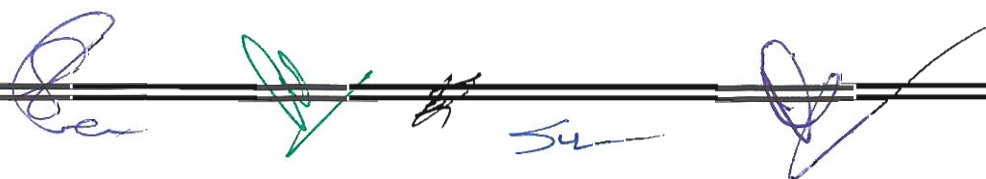
- a. Physiology of ovary and testis
- b. Physiology of menstrual cycle and spermatogenesis
- c. Functions of progesterone, estrogen and testosterone
- d. Puberty & menopause
- e. Physiological changes during pregnancy

9. Endocrine System-

- a. Introduction: Major endocrine glands, Hormone: classification, mechanism of action, Functions of hormones.
- b. Pituitary Gland: Anterior Pituitary and Posterior Pituitary hormones: Secretory cells, action on target cells, regulation of secretion of each hormone. Disorders: Gigantism, Acromegaly, Dwarfism, Diabetes insipidus. Physiology of growth and development: hormonal and other influences.
- c. Pituitary- Hypothalamic Relationship.
- d. Thyroid Gland: Thyroid hormone and calcitonin: secretory cells, synthesis, storage, action and regulation of secretion. Disorders: Myxedema, Cretinism, Grave's Disease.
- e. Parathyroid hormones: secretory cell, action, regulation of secretion. Disorders: Hypoparathyroidism, Hyperthyroidism, Calcium metabolism and its regulation.
- f. Adrenal Gland: Adrenal Cortex: Secretory cells, synthesis, action, regulation of secretion of Aldosterone, Cortisol, and Androgens. Disorders: Addison's disease, Cushing's syndrome, Conn's syndrome, Adreno genital syndrome.
- g. Adrenal Medulla: Secretory cells, action, regulation of secretion of adrenaline and noradrenaline, Disorders: Pheochromocytoma.
- h. Endocrine Pancreas: Secretory cells, action, regulation of secretion of insulin and glucagon, Glucose metabolism and its regulation, Disorder: Diabetes mellitus. Diabetes Mellitus, Physiological basis of Peptic Ulcer, Jaundice, GIT disorders and Dietary fiber, Thyroid functions, Vitamins deficiency.
- i. Calcitriol, Thymus and Pineal gland (very brief).
- j. Local Hormones (Briefly).

10. Exercise Physiology

- a. Basal Metabolic Rate and Respiratory Quotient
- b. Energy metabolism



- c. Fatigue
- d. Oxygen debt
- e. Acute cardiovascular changes during exercise, difference between mild, moderate and severe exercise, concept of endurance
- f. Acute respiratory changes during exercise
- g. Concept of training/conditioning, effects of chronic exercise/effect of training on the cardiovascular & respiratory system
- h. Body temperature regulation during exercise
- i. Hormonal and metabolic effects during exercise
- j. Effects of exercise on muscle strength, power, endurance

PRACTICAL

More detailed study of the physiology and practical applications of the following selected topics with emphasis on aspects, which should help in understanding the nature and treatment of common clinical situations of interest in Physiotherapy.

1. Clinical Examination: Examination of Radial pulse, blood pressure, CVS, Respiratory system, Sensory system, Motor System, reflexes, cranial nerves.
2. Amphibian Experiments– Demonstration and Dry charts Explanation, Normal cardiogram of amphibian heart, Properties of Cardiac muscle, Effect of temperature on cardiogram, Simple muscle curve, Effect of increasing the strength of the stimuli
3. Effect of temperature on muscle contraction, Effect of two successive stimuli, Effect of Fatigue, Effect of load on muscle contraction, Genesis of tetanus and clonus, Velocity of impulse transmission.
4. Recommended Demonstrations
 - a. Spirometry
 - b. Artificial Respiration
 - c. ECG
 - d. Perimetry
 - e. Ergometry
- i. Haematology: To be done by the students

Study of Microscope and its uses, Determination of RBC count, WBC count, Differential leukocyte count, Estimation of hemoglobin, Calculation of blood indices, Determination of blood groups, Determination of bleeding time, Determination of clotting time, Demonstrations only: Determination of ESR, Determination of PCV

.BIOCHEMISTRY & BIOPHYSICS

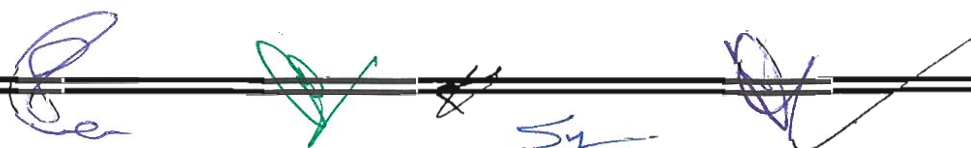
SYLLABUS- BACHELOR OF PHYSIOTHERAPY
 ATAL BIHARI VAJPAYEE MEDICAL UNIVERSITY, UP, LUCKNOW

THEORY

1. Nutrition: RDA, BMR, SDA, caloric requirement and balanced diet.
2. Carbohydrates: Definition, classification and general functions. Carbohydrate Metabolism - Glycolysis, T.C.A cycle.
3. Lipids: Definition, classifications and general functions. Essential fatty acids and their importance, Cholesterol, Lipoproteins. Metabolism-b-Oxidation of fatty acids, fatty liver and ketosis.
4. Amino Acids : Definition, classification, essential and nonessential amino acids.
5. Proteins: Definition, classification, and Biomedical Importance. Metabolism:
6. Formation and fate of ammonia, Urea cycle and its significance.
7. Study of hemoglobin and myoglobin with their functions.
8. Enzymes: Definition, classification with examples, Factors affecting enzyme action, isoenzyme and coenzyme, Clinical importance of enzymes.
9. Biochemistry of connective tissue - Introduction, various connective tissue proteins collagen, elastin- structure and associated disorders.
10. Vitamins: Definition, classification and functions, dietary source, daily requirement and deficiency disorders.
11. Cell Biology: Introduction, Cell structure, Cell membrane structure and function, various types of absorption, Intracellular organelles and their functions, briefly on cytoskeleton.
12. Muscle Contraction: Contractile elements in muscle, briefly on the process of muscle contraction, Energy for muscle contraction.
13. Clinical Biochemistry: Normal levels of blood and urine constituents, Relevance of blood and urine levels of Glucose, Urea, Uric acid, Creatinine, Calcium, Phosphates, pH and Bicarbonate, Liver function tests, Renal function tests.

BIOPHYSICS

Overview of Electrophysiology different electrical signals in human body. Potential of nerve – resting membrane potential–ionic basis. Nernst equation. Hodgkin-Huxley model. Goldman equation. Action potential- ionic basis, gating kinetics and physio-pharmacology of different ion channels. Voltage clamp studies, biphasic and compound action potential. Receptor potential- general transduction mechanism, stimulus–receptor relationship, adaptation of receptors. Non-Ionizing Radiation physics :Electricity and Magnetism at the Cellular level, Different sources of Non Ionizing radiation-their physical; properties, Various types of optical radiations-UV, visible & IR sources, Lasers-Theory and mechanism, Measurement of fluence from optical sources, Optical properties of



tissues, theory and experimental techniques, interaction of laser radiation with tissues, photo thermal, photochemical, photo ablation electromechanical effect. Radiofrequency & Microwave radiation, Production and properties, interaction mechanism of RF and microwaves with biological systems, Thermal and non-thermal effects on whole body, lens and cardiovascular systems, tissue characterization. Hyperthermia and other applications. Biomagnetism, Effects, applications. Electrical Impedance and Biological Impedance, Principle and theory of thermography, applications in biology & medicine The use of electromagnetic, acoustic and mechanical energies to produce biophysical effects at the cellular, tissue, organic level. Photobiological phenomenon: Photoactivation of biological systems, Photodynamic therapy and mechanism of photodynamic action on cells. Photobiostimulation through Lasers. Photo-medicine. Optical properties of skin, Acute and chronic effect of sunlight on skin, Photosensitivity, Phototoxicity, photoallergy and clinical implication, Beneficial effects of sun and artificial light energy, Photoprotection, Photoimmunology. Mediphotonics: Lasers in dermatology, oncology and cell biology.

Practical Biochemistry & Biophysics

1. Qualitative and Quantitative estimation: Routine blood investigations normal values LFT, KFT, TFT, Lipid Profile, Thyroid Profile, Plasma glucose GTT, G.t curve Plasma protein, Plasma creatinine Demo experiments enzymes assays, Na, K, Ca.
2. To study the charge characteristics of cells through micro Electrophoresis.
3. To study the effect of visible light intensity and time of irradiation on photo reactivation process.
4. To study the Photo Inactivation of Enzymes.
5. Effect of Lasers on Biomolecules and Cellular Systems.
6. Study of galvanic skin response (GSR): Measurement of GSR in resting and different stressful condition.
7. Measurement of Pressure, Movement, Force, Frequency & Time using different transducers.

HEALTH PSYCHOLOGY

SUBJECT DESCRIPTION – General Clinical Psychology will introduce students to the basic psychology and sociology concepts, principles and social process, social institutions in relation to the individual, family and community and the various social factors affecting the family in rural and urban communities in India will be studied.



THEORY

1. Introduction to Psychology

- a. Schools: Structuralism, functionalism, behaviorism, Psychoanalysis.
- b. Methods: Introspection, observation, inventory and experimental method.
- c. Branches: pure psychology and applied psychology
- d. Psychology and physiotherapy

2. Growth and Development

- a. Lifespan: Different stages of development (Infancy, childhood, adolescence, adulthood, middle age, old age).
- b. Heredity and environment: role of heredity and environment in physical and psychological development, "Nature v/s Nurture controversy".

3. Sensation, attention and perception

- a. Sensation: Vision, Hearing, Olfactory, Gustatory and Cutaneous sensation, movement, equilibrium and visceral sense.
- b. Attention: Types of attention, Determinants of attention (subjective determinants and objective determinants).
- c. Perception: Gestalt principles of organization of perception (principle of figure ground and principles of grouping), factors influencing perception (past experience and context).
- d. Illusion and hallucination: different types.

4. Motivation

- a. Motivation cycle (need, drive, incentive, reward).
- b. Classification of motives.
- c. Abraham Maslow's theory of need hierarchy

5. Frustration and conflict

- a. Frustration: sources of frustration.
- b. Conflict: types of conflict.
- c. Management of frustration and conflict

6. Emotions

- a. Three levels of analysis of emotion (physiological level, subjective state, and overt behavior).
- b. Theories of emotion
- c. Stress and management of stress.

7. Intelligence

- a. Theories of intelligence.
- b. Distribution of intelligence.
- c. Assessment of intelligence

8. Thinking

- a. Reasoning: deductive and inductive reasoning
- b. Problem solving: rules in problem solving (algorithm and heuristic)
- c. Creative thinking: steps in creative thinking, traits of creative people

9. Learning

- a. Factors affecting learning.
- b. Theories of learning: trial and error learning, classical conditioning, Operant conditioning, insight learning, social learning theory.
- c. The effective ways to learn: Massed/Spaced, Whole/Part, Recitation/Reading, Serial/Free recall, Incidental/Intentional learning, Knowledge of results, association, organization, and mnemonic methods.

10. Personality

- a. Approaches to personality: type & trait, behavioristic, psycho analytic and humanistic approach.
- b. Personality assessment: observation, situational test, questionnaire, rating scale, interview, and projective techniques.
- c. Defense Mechanisms: denial of reality, rationalization, projection, reaction formation, identification, repression, regression, intellectualization, undoing, introjection, acting out.

11. Social psychology

- a. Leadership: Different types of leaders, Different theoretical approaches to leadership.
- b. Attitude: development of attitude, Change of attitude.

12. Clinical psychology – Models of training, abnormal behavior assessment, clinical judgement, psychotherapy, self-management methods, physiotherapist patient interaction, aggression, self-imaging, stress management, assertive training, Group therapy, Body awareness, Pediatric, child and geriatric clinical psychology.

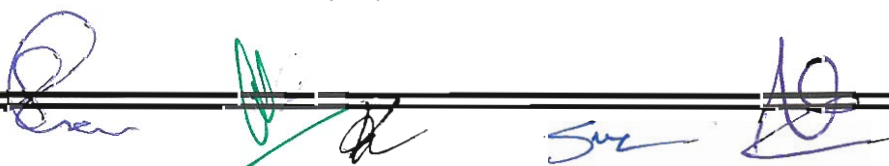
13. Counselling : Principles and Types of counselling, PLISSIT model, Principles and techniques of counselling special children and their family members.

INTRODUCTION TO YOGA – BASIC THEORY, SCIENCE AND TECHNIQUES

THEORY (15hours)

1. Foundations of Yoga

- a. Introduction to Yoga and its philosophy
- b. Brief history, development of Yoga
- c. Philosophical foundations of Yoga
- d. Streams & types of Yoga



e. Meditation

2. Yoga and Health

- a. Concept of body in yoga – Pancha kosha theory
- b. Concept of Health and Disease in yoga
- c. Stress management through yoga
- d. Disease prevention and promotion of positive health through yoga
- e. Physiological effects of Yoga practices Physiological effects of Shatkriyas
- f. Physiological effects of sanas
- g. Physiological effects of Pranayamas
- h. Physiological effects of Relaxation techniques and Meditation

PRACTICAL - List of Practical/Demonstrations (30hours)

2. Sukshma Vyayama / Sithilikarna Vyayama and Surya Namaskar: (3hours)
 - a. Loosening exercises of each part of the body particularly of the joints
 - b. 12 step Surya namaskar with prayer and specific mantras
3. Yogic kriyas [Observation/demonstration only] (3hours)
 - a. Neti (Jala Neti, Sutra Neti)
 - b. Dhauti (Vamana Dhauti, Vastra Dhauti)
 - c. Trataka
 - d. Shankaprakshalana (Laghu & Deergha)
4. Yog asanas
 - a. Standing postures (4hours)
 - i. Tadasana (Upward stretch posture)
 - ii. Ardha Chakrasana (Half wheel posture)
 - iii. Ardha Kati chakrasana (Half lumber wheel posture)
 - iv. Utkatasana (Chair posture)
 - v. PadaHastasana (Hand to toes posture)
 - vi. Trikonasana (Triangle posture)
 - vii. ParshvaKonasana (Side angle posture)
 - viii. Garudasana (Eagle posture)

ix. Vrikshasana (Tree posture)

b. Prone positions

- i. Makarasana (Crocodile posture)
- ii. Bhujangasana (Cobra posture)
- iii. Salabhasana (Locust posture)
- iv. Dhanurasana (Bow posture)
- v. Naukasana (Boat posture)
- vi. Marjalsana (Cat posture)

c. Supine postures

- i. Ardhalasana/Uttana Padasana
- ii. Sarvangasana (All limb posture)
- iii. Pawanamuktasana (Wind releasing posture)
- iv. Matsyasana (Fish posture)
- v. Halasana (Plough posture)
- vi. Chakrasana (Wheel posture)
- vii. Setu Bandhasana (Bridge posture)
- viii. Shavasana (Corpse posture)

d. Sitting postures

- i. Parvatasana (Mountain posture)
- ii. Bhadrasana (Gracious posture)
- iii. Vajrasana (Adamantine posture)
- iv. Paschimottanasana (Back stretching posture)
- v. Janushirasana (Head to knee posture)
- vi. Simhasana (Lion posture)
- vii. Gomukhasana (Cow head posture)
- viii. Ushtrasana (Camel posture)
- ix. Ardha Matsyendrasana (Half matsyendra spine twist posture)
- x. Vakrasana (Spinal twist posture)
- xi. Kurmasana (Turtle posture)
- xii. Shashankasana (Rabbit posture)
- xiii. Mandukasana (Frog Posture)

e. Meditative postures and Meditation techniques

- i. Siddhasana (Accomplished pose)
- ii. Padmasana (Lotus posture)
- iii. Samasana

iv. Swastikasana (Auspicious posture)

5. Pranayamas

- a. The practice of correct breathing and Yogic deep breathing
- b. Kapalabhati
- c. Bhastrika
- d. Sitali
- e. Sitkari
- f. Sadanta
- g. Ujjayi
- h. Surya Bhedana
- i. Chandra Bhedana
- j. Anuloma-Viloma/Nadishodana
- k. Bhramari

6. Relaxation Techniques

- a. Shavasana
- b. Yoga Nidra

FIRST AID & EMERGENCY CARE

Introduction of First Aid

Definition, aims and importance of First Aid.

Rules/General principles of First Aid

Concepts of Emergency

Procedure and Techniques in First Aid

Preparation of first Aid kit, Dressing bandaging and splinting

Transportation of injured patient

CPR-Mouth to mouth, Sylvester, Schafer, External cardiac massage

First Aid in Emergency

Asphyxia, Drowning, shock

Wound and bleeding, Injuries of the soft and dense tissue

Injury of joint and bone, Falls, Hanging

Foreign body ear, ear and nose and throat

Burns and scalds

Poisoning- Ingestion, inhalation, bite and stings

Assessing a Casualty and vitals parameters

Assessing the sick or injured, Mechanisms of injury

Primary survey, Secondary survey

Head-to-toe examination, Monitoring vital signs

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Community Emergencies and Community Resources

Fire, Explosion, Floods, Earth-Quakes and famines

Role Of PT in disaster management

Community Resources-Police, Ambulance services

Voluntary agencies-local, state national and International

Emergency Management

Principle of Emergency care

Triage

Airways obstruction, Basic knowledge of First aid management of burn

Basic knowledge of First aid for medical and surgical emergency

Basic knowledge of first aid management of heat stroke

Basic knowledge of First aid management of snake bite and poisoning

Emergency Disaster Management

Natural calamities-Flood, earthquake, Volcanic eruptions

Man made disaster-Explosion, War, Fire Accidents

The Unconscious Casualty

Breathing and circulation, Life-saving priorities

Unconscious adult, Unconscious child, Unconscious infant, How to use an AED

Techniques and Equipment

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

BLS and ACLS

Bls guideline for adult and paediatrics

CPR techniques, Choking

ACLS basic guidelines

REMEDIAL ENGLISH

This course introduces the elements of English as used in medical terminology. Emphasis is placed on building familiarity with medical words through knowledge of roots, prefixes, and suffixes. Topics include: origin, word building, abbreviations and symbols, terminology related to the human anatomy, reading medical orders and reports, and

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terminology specific to the student's field of study. Spelling is critical and will be counted when grading tests. Derivation of medical terms. Define word roots, prefixes, and suffixes. Conventions for combined morphemes and the formation of plurals. Basic medical terms in health care and physiotherapy. Form medical terms utilizing roots, suffixes, prefixes, and combining roots. Interpret basic medical abbreviations/symbols.

Communicative English

Time words and Tenses

Active and Passive Voice

Direct-Indirect Speeches

Prepositions and Conditionals

Practice of daily use words, numerals and tongue twisters

Vocabulary building, Construction of simple sentences

Basic sentence pattern, subject and Predicate

Functional English

Introduction to Functional English

Describing Actions and Processes, Offering, Requests, Routines/Timetable,

Making Comparisons, Sharing Interests and Experience

Conversational Skills An Introduction to Conversations for various purposes

Importance of acquiring Conversational Skills

Models, Techniques and Types of Conversations

Introduction to Communication and Key Concepts in Communication

An Introduction to Communication

Basic Terms, Concepts, and Contexts of Communication

Factors influencing message encoding, the nature of message, and message uses and effects

Importance, Types and Principles of Communication

Effective Listening and Reading Skills

An Introduction to Listening and Reading

Purposes, Types and Techniques of Listening and Reading

Barriers to effective Listening & Reading and overcoming the Barriers

Note-taking and Note-making

Writing Skills An Introduction to Writing

Importance of Effective Writing Paragraph Development: Coherence – Topic

Sentence, Supporting Sentence & Data etc.

Business Letter Writing

COMPUTERS & INFORMATICS

SUBJECT DESCRIPTION: The students will be able to appreciate the role of computer technology. The course has focus on computer organization, computer operating system and software, and MS windows, Word processing, Excel data worksheet and PowerPoint presentation. Topics to be covered under the subject areas follow:

1. Introduction to computer: I/O Devices, Operating Systems, Introduction to MS-Word: introduction, components of a word window, creating, opening and inserting files, editing a document file, page setting and formatting the text, saving the document, spell checking, printing the document file, creating and editing of table, mail merge.
2. Introduction to Excel: introduction, about worksheet, entering information, saving work books and formatting, printing the worksheet, creating graphs.
3. Introduction to power-point: introduction, creating and manipulating presentation, views, formatting and enhancing text, slide with graphs.
4. Medical Record Keeping and Health Informatics
5. Application of Computers in clinical settings, Digital Equipments, Medical Electronics
6. Robotics in Physiotherapy
7. Artificial Intelligence in Physical Therapy: What is Artificial Intelligence? AI-enabled devices, SWORD, Motion Coach, Physitrack, AI-enabled robotics, Deep learning frameworks

PRACTICAL: Practical on fundamentals of computers-

1. Learning to use MS office: MS word, MS Power Point, MS Excel.
2. Demonstration of Medical Electronic components
3. Demonstration of Robotics in Physiotherapy
4. Demonstration of AI based applications.

ENVIRONMENTAL SCIENCE

Natural resources Renewable and non Renewable resources:

Natural resources and associated problems. a) Water Resources: Use and over utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. b) Mineral Resources: Use and exploitation, environmental effects of extracting and using minerals resources, case studies. c) Food Resources: World food problems, changes caused by agriculture and overgrazing, effects of



modern agriculture, fertilizer -pesticide problems, Water logging, Salinity, case studies. d) Energy Resources: Growing energy needs, renewable and nonrenewable energy sources, use of alternate energy sources, case studies. e) Land Resources: Land as a resource, Land degradation, Man induced landslides, Soil erosion and desertification. - Role of an individual in conservation of natural resources - Equitable use of resources for sustainable lifestyles.

Ecosystems: a) Concept of an Ecosystem. b) Structure and Function of an Ecosystem.c) Producer Consumer and decomposers. d) Energy flow in the Ecosystem. e) Ecological Succession.

Biodiversity and its conservation: a) Introduction - Definition: Genetic, Species and Ecosystem diversity. b) Bio-Geographical classification of India, c) Value of Biodiversity: Consumptive use, productive use, Social, ethical, aesthetic and option values d) Biodiversity at Global, National & Local levels.e) Hotspots of Biodiversity f) Threats to Biodiversity: Habitat Loss, Poaching of Wildlife, Man-Wildlife Conflicts

Environmental pollution:a) Definition, Causes, effects and control measures of-Air Pollution, Water Pollution, Soil Pollution, Marine Pollution, Noise Pollution, Thermal Pollution, Nuclear Hazards b) Solid Waste Management: Causes, effects and control measures of urban and Industrial Wastes.c) Role of an Individual in prevention of pollution.d) Pollution case studies e) Disaster Management: floods, earthquake, cyclones and landslides.

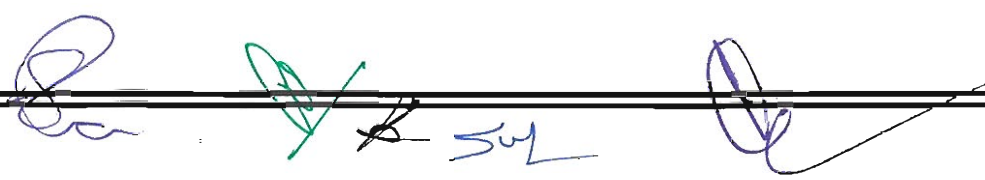
Social issues and Environments: a) Resettlement and Rehabilitation of people; its problems and concerns, case studies. b) Environmental ethics: issues and possible solutions c) Greenhouse effect and global Warming, effects of acid Rain and their remedial measures and ozone Layer depletion.

Human pollution and the environments:a) Population growth variation among nations, Population Explosion, Family welfare programme b) Environment and Human Health,c) Human Rights.e) Role of Information Technology in Environment and Human Health, Case studies.

Field Work a)Visit to a local area to document environmental assets river/forest/grassland/hill/mountain b)Visit to a local polluted site – Urban/Rural/Industrial/Agricultural c)Study of common plants, insects, birds • Study of simple ecosystems-pond, river, hill slopes etc

BPT SECOND YEAR

SYLLABUS- BACHELOR OF PHYSIOTHERAPY
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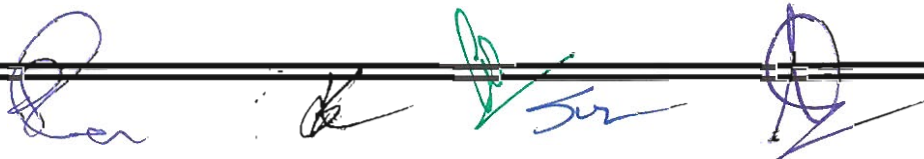


EXERCISE THERAPY-I

SUBJECT DESCRIPTION- In this course, the students will learn the principles and effects of exercise as a therapeutic modality and will learn the techniques in the restoration of physical functions.

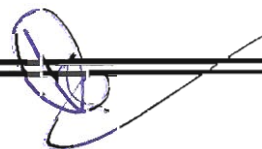
THEORY

1. Introduction to exercise therapy
2. Mechanical principle applied in human body – gravity, centre of gravity, line of
3. gravity, base of support, equilibrium, axis and planes
4. Lever and pulley
5. Disability models – ICIDH model of disability, Nagi model of disability, ICF model
6. Exercise physiology – effect of exercise in various systems – musculoskeletal, neuromuscular, cardiovascular, respiratory system
7. Assessment of patient's condition – Measurements of Vital parameters, Starting Positions – Fundamental positions & derived Positions, Planning of Treatment
8. Movements
 - a. Passive Movements: Causes of immobility, Classification of Passive movements, Specific definitions related to passive movements, Principles of giving passive movements, Indications, contraindications, effects of uses, Techniques of giving passive movements.
 - b. Active Movements
 - c. Definition of strength, power & work, endurance, muscle actions.
 - d. Physiology of muscle performance: structure of skeletal muscle, chemical & mechanical events during contraction & relaxation, muscle fiber type, motor unit, force gradation.
 - e. Causes of decreased muscle performance
 - f. Physiologic adaptation to training: Strength & Power, Endurance.
 - g. Types of active movements
9. Free exercise: Classification, principles, techniques, indications, contraindications, effects and uses.
10. Active Assisted Exercise: principles, techniques, indications, contraindications, effects and uses Assisted-Resisted Exercise: principles, techniques, indications, contraindications, effects and uses Resisted Exercise: Definition, principles, indications, contraindications, precautions & techniques, effects and uses.
11. Types of resisted exercises: Manual and Mechanical resistance exercise,



Isometric exercise, Dynamic exercise: Concentric and Eccentric, Dynamic exercise: Constant versus variable resistance, Isokinetic exercise, Open-Chain and Closed-Chain exercise.

12. Stretching: Definition, properties of soft tissue, mechanical and neurophysiological properties of connective tissue, mechanical properties of non contractile tissue. Determinants, type and effect of stretching, precautions, general applications of stretching technique.
13. Methods of Testing
 - a. Functional tests
 - b. Measurement of Joint range: ROM- Definition, Normal ROM for all peripheral joints & spine, Goniometer- parts, types, principles, uses, Limitations of goniometry, Techniques for measurement of ROM for all peripheral joints
 - c. Tests for neuromuscular efficiency
 - i. Electrical tests
 - ii. Manual Muscle Testing: Introduction to MMT, Principles & Aims, Indications & Limitations, Techniques of MMT for group & individual: Techniques of MMT for upper limb/Techniques of MMT for lower limb/Techniques of MMT for spine.
 - iii. Anthropometric Measurements: Muscle girth- biceps, triceps, forearm, quadriceps, calf
 - iv. Static power Test
 - v. Dynamic power Test
 - vi. Endurance test
 - vii. Speed test
 - d. Tests for Co-ordination
 - e. Tests for sensation
 - f. Pulmonary Function tests
 - g. Measurement of Limb Length: true limb length, apparent limb length, segmental limb length
 - h. Measurement of the angle of Pelvic Inclination
14. Relaxation
 - a. Definitions: Muscle Tone, Postural tone, Voluntary Movement, Degrees of relaxation, Pathological tension in muscle, Stress mechanics, types of stresses, Effects of stress on the body mechanism, Indications of relaxation, Methods & techniques of relaxation- Principles & uses, Types: General, Local, Jacobson's, Mitchel's, Heartfulness Relaxation.
15. Therapeutic Massage :History and Classification of Massage Technique,



Principles, Indications and Contraindications, Technique of Massage Manipulations, Physiological and Therapeutic Uses of Specific Manipulations

16. Suspension – definition, types, uses and therapeutic application
17. Therapeutic Gymnasium- Set-up of gymnasium & its importance, Various equipment in the gymnasium, Operational skills & uses of the equipment.

PRACTICAL

1. Different test methods
2. Demonstrate relaxation techniques.
3. Demonstrate Starting positions and derived positions
4. Demonstrate to apply the technique of passive movements
5. Demonstrate various techniques of Active movements
6. Demonstrate various relaxation techniques
7. Demonstrate massage technique application according to body parts.
8. Mechanical Principles applied in Physiotherapy like force, Torque, Centre of Gravity, etc.
9. Demonstration of different types of levers in the human body.
10. Demonstration of different types of pulleys and strings used in Physiotherapy.

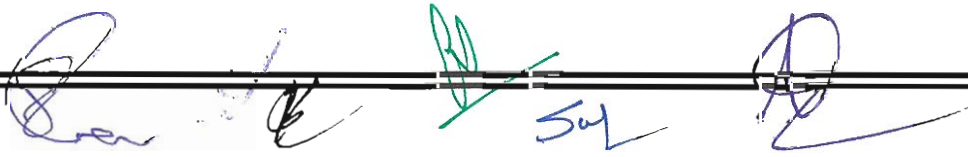
ELECTROTHERAPY-I

SUBJECT DESCRIPTION- In this course the student will learn the Principles, Techniques, and Effects, Indication, Contra-Indication and the dosage parameter for various indications of electrotherapeutic modalities in the restoration of physical function. The objective of this course is that after 220 hrs of lectures, demonstration, practical and clinics the student will be able to list the indications, contraindications, dosages of electrotherapy modalities, demonstrates the different techniques, and describe their effects on various conditions.

THEORY

Section I

Basic Electronics: P-N Junction, Transistor characteristics, Transistor as Amplifier, Cascade Amplifiers, DC coupling, Field effect Transistors, Light sensitive semiconductor devices, Oscillators -Phase shift, Wein Bridge, Relaxation Oscillators, Operational Amplifiers, Circuits and characteristics of OP-Amplifiers in different configuration, Concept of Digital Electronics, Binary number system, Binary Arithmetic, Analog to Digital conversion, Digital to Analog conversion, Counters, Shift Registers, Memory, Introduction to Microprocessor, CRO- Design Working and

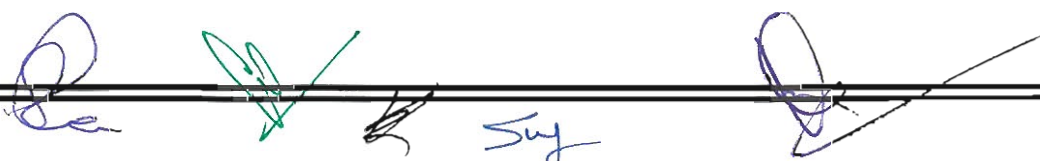


Applications. Bioelectric Signal Monitoring and Recording. Origin and Characteristics of Bioelectric signals & recording, Electrodes-types Design and properties and Utility, Skin contact impedance of Electrodes, noise suppression techniques, recording system, Medical Display systems, Patient Monitoring systems, Biomedical Telemetry. Transducers and Measurement of Physiological event, Transducers- properties and the principle of Transducers.

- a. Current Electricity: Units of Electricity: farad, Volt, Ampere, Coulomb, Watt
- b. Condensers: Definition, principle, Types, construction and working, capacity & uses.
- c. Magnetism: Definition, Properties of magnets, Electromagnetic induction, Transmission by contact, Magnetic field and magnetic forces, Magnetic effects of an electric field.
- d. Conductors, Insulators, Potential difference, Resistance and intensity
- e. Ohm's law and its application to DC and AC currents, Fuse: construction, working and application.
- f. Transmission of electrical energy through solids, liquids, gases and vacuum.
- g. Rectifying Devices - Thermionic valves, Semiconductors, Transistors, Amplifiers, transducer and Oscillator circuits.
- h. Display devices and indicators – analogue and digital.
- i. Transformer: Definition, Types, Principle, Construction, Eddy current, working uses.
- j. Chokes: Principle, Construction and working, Uses

Low frequency Currents

1. Basic types of current
 - a. Direct Current: types, physiological & therapeutic effects.
 - b. Alternating Current
2. Types of Current used in Therapeutics
 - a. Modified D.C
 - i. Faradic Current
 - ii. Galvanic Current
 - b. Modified A.C
 - i. Sinusoidal Current
 - ii. Diadynamic Current.
3. Faradic Current: Definition, Modifications, Techniques of Application of Individual, Muscle and Group Muscle stimulation, Physiological & Therapeutic effects of Faradic Current, Precautions, Indications & Contra-Indications, and Dangers.



4. Galvanic Current: Definition, Modifications, Physiological & Therapeutic effects of Galvanic Current, Indications & Contra-Indications, Dangers, Effect of interrupted galvanic current on normally innervated and denervated muscles and partially denervated muscles.
5. Sinusoidal Current & Diadynamic Current in Brief.
6. HVPGS– Parameters & its uses
7. Ionization/Iontophoresis: Techniques of Application of Iontophoresis, Indications, Selection of Current, Commonly used Ions (Drugs) for pain, hyperhidrosis, would heal.
8. Cathodal/Anodal galvanism.
9. Micro Current & Macro Current
10. Types of Electrical Stimulators
 - a. NMES- Construction, component.
 - b. Neuromuscular diagnostic stimulator- construction, component.
 - c. Components and working Principles
11. Principles of Application: Electrode tissue interface, Tissue Impedance, Types of Electrode, Size & Placement of Electrode – Water bath, Unipolar, Bi-polar, Electrode coupling, Current flow in tissues, Lowering of Skin Resistance.
12. Nerve Muscle Physiology: Action Potential, Resting membrane potential, Propagation of Action Potential, Motor unit, synapse, Accommodation, Stimulation of Healthy Muscle, Stimulation of Denervated Muscle, and Stimulation for Tissue Repair.
13. TENS: Define TENS, Types of TENS, Conventional TENS, and Acupuncture TENS, Burst TENS, Brief & Intense TENS, Modulated TENS. Types of Electrodes & Placement of Electrodes, Dosage parameters, Physiological & Therapeutic effects, Indications & Contraindications.
14. Pain: Define Pain, Theories of Pain (Outline only), and Pain Gate Control theory in detail.
15. tDCS- Principles, Physiology of action, indications, contraindications and techniques of application.

Radiation therapy/Actinotherapy:

1. IRR: Define IRR, wavelength & parameters, Types of IR generators, Production of IR, Physiological & Therapeutic effects, Duration & frequency of treatment, Indication & Contraindication. [2Hours]
2. UVR: Define UVR, Types of UVR, and UVR generators: High pressure mercury vapour lamp, Water cooled mercury vapour lamp, Kromayer lamp, Fluorescent tube, Theraktin tunnel, PUVA apparatus, Physiological & Therapeutic effects. Sensitizers & Filters, test dosage calculation. Calculation of E1, E2, E3, E4 doses. Indications, contraindications. Dangers. Dosages for different therapeutic effects, Distance in UVR lamp [8Hours]

Superficial heating Modalities

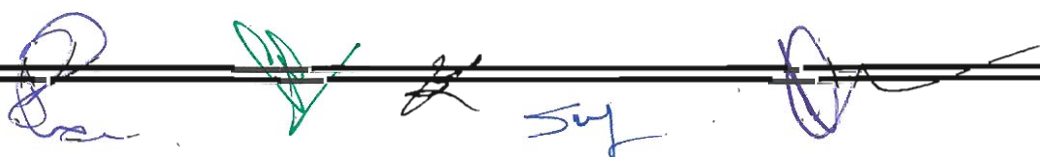
1. Wax Therapy: Principle of Wax Therapy application – latent Heat, Composition of Wax Bath Therapy unit, Methods of application of Wax, Physiological & Therapeutic effects, Indications & Contraindication, Dangers.
2. Contrast Bath: Methods of application, Therapeutic uses, Indications & Contraindications.
3. Moist Heat Therapy: Hydro collator packs – in brief, Methods of applications, Therapeutic uses, Indications & Contraindications.
4. Cyclotherm: Principles of production, Therapeutic uses, Indications & Contraindications.
5. Fluidotherapy: Construction, Method of application, Therapeutic uses, Indications & Contraindications.
6. Whirl Pool Bath: Construction, Method of Application, Therapeutic Uses, Indications & Contraindications.

Cryotherapy: Define- Cryotherapy, Principle- Latent heat of fusion, Physiological & Therapeutics effects, Techniques of Applications, Indications & Contraindications, Dangers, and Methods of application with dosages.

PRACTICAL

The student of Electrotherapy must be able to demonstrate the use of electrotherapy modalities applying the principles of electrotherapy with proper techniques, choice of dosage parameters and safety precautions.

1. Demonstrate the technique for patient evaluation—receiving the patient and positioning the patient for treatment using electrotherapy.
2. Collection of materials required for treatment using electrotherapy modalities and testing of the apparatus.
3. Demonstrate placement of electrodes for various electrotherapy modalities.
4. Electrical stimulation for the muscles supplied by the peripheral nerves
5. Faradism under Pressure for UL and LL
6. Plotting of SD curve with chronaxie and rheobase
7. Demonstrate FG test
8. Demonstrate treatment techniques using SWD, IRR and Microwave diathermy
9. Demonstrate the technique of UVR exposure for various conditions— calculation of test dose
10. Technique of treatment and application of Hydro collator packs, cryotherapy, contrast bath, wax therapy
11. Demonstrate the treatment method using whirlpool bath
12. Winding up procedure after any electrotherapy treatment method.



BIOMECHANICS AND KINESIOLOGY-

1. Basics of Biomechanics

- a. Introduction to Biomechanics and kinesiology and related terminology
- b. Motion: definition, types of motion, plane and axis of motion, factor determining the kind and modification of motion
- c. Force - Definition, diagrammatic representation of force, point of application, classification of forces, concurrent, coplanar and collinear forces, composition and resolution of forces, angle of pulls of muscle
- d. Friction
- e. Gravity - Definition, line of gravity, Centre of gravity
- f. Equilibrium - Supporting base, types, and equilibrium in static and dynamic state
- g. Levers - Definition, function, classification and application of levers in physiotherapy & order of levers with example of lever in human body
- h. Pulleys - system of pulleys, types and application
- i. Elasticity - Definition, stress, strain, HOOKE'S Law
- j. Springs - properties of springs, springs in series and parallel, elastic materials in use

2. Muscle biomechanics

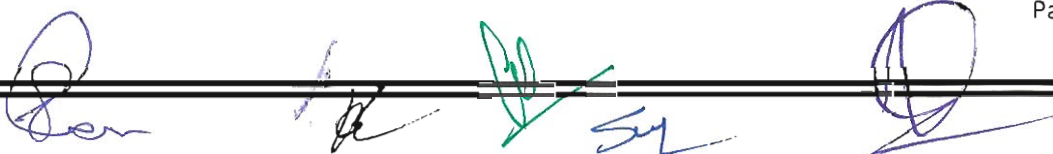
Definition, properties of muscle, muscular contraction, structural classification, action of muscle in moving bone, direction of pull, angle of pull, functional classification, coordination of muscular system.

3. Joint structure and Function

- a. Introduction: Basic Principle of Human Joint design & Joint Function.
- b. Materials Found in Human Joints: Structure of Connective Tissue.
- c. Brief about Specific Connective Tissue Structures.
- d. General Properties of Connective Tissue: Mechanical Behavior, Viscoelasticity
- e. Time and Rate-Dependent Properties, Properties of Specific Tissues
- f. General Changes with Disease, Injury, Immobilization, Exercise, and Overuse

4. Biomechanics of the vertebral column-

- a. General structure and function
- b. Regional structure and function- Cervical region, thoracic region, lumbar region, sacral region
- c. Muscles of the vertebral column
- d. General effects of injury and aging




5. Biomechanics of the peripheral joints-

- a. The shoulder complex: Structure and components of the shoulder complex and their integrated function
 - b. The elbow complex: Structure and function of the elbow joint – humeroulnar and humeroradial articulations, superior and inferior radioulnar joints; mobility and stability of the elbow complex; the effects of immobilization and injury.
 - c. The wrist and hand complex: Structural components and functions of the wrist complex; structure of the hand complex; functional position of the wrist and hand.
 - d. The hip complex: structure and function of the hip joint; hip joint pathology- arthrosis, fracture, bony abnormalities of the femur.
 - e. The knee complex: structure and function of the knee joint – tibiofemoral joint and patellofemoral joint; effects of injury and disease.
 - f. The ankle and foot complex.: structure and function of the ankle joint, subtalar joint, talocalcaneonavicular joint, transverse tarsal joint, tarsometatarsal joints, metatarsophalangeal joints, interphalangeal joints, structure and function of the plantar arches muscles of the ankle and foot, deviations from normal structure and function – Pes Planus and Pes Cavus.
6. Analysis of Posture and Gait – Static and dynamic posture, postural control, kinetics and kinematics of posture, ideal posture analysis of posture, effects of posture on age, pregnancy, occupation and recreation; general features of gait, gait initiation, kinematics and kinetics of gait, energy requirements, kinematic and kinetics of the trunk and upper extremities in relation to gait, stair case climbing and running, effects of age, gender, assistive devices, disease, muscle weakness, paralysis, asymmetries of the lower extremities, injuries and malalignments in gait; Movement Analysis: ADL activities like sitting–to standing, lifting, various grips, pinches.

PRACTICAL- shall be conducted for various joint movements and analysis of the same. Demonstration may also be given as how to analyze posture and gait. The student shall be taught and demonstrated to analysis for activities of daily living–ADL– (like sitting to standing, throwing, lifting etc.) The student should be able to explain and demonstrate the movements occurring at the joints, the muscles involved, the movements or muscle action produced, and mention the axis and planes through which the movements occur. The demonstrations may be done on models or skeleton.

PATHOLOGY

SUBJECT DESCRIPTION: This subject follows the basic subjects of Anatomy,



Physiology and Biochemistry and it forms a vital link between pre clinical subjects and clinical subjects. Pathology involves the study of causes and mechanisms of diseases. Microbiology involves the study of common organisms causing diseases including nosocomial infections and precautionary measures to protect one from acquiring infections. The knowledge and understanding of Microbiology & Pathology of diseases is essential to institute appropriate treatment or suggest preventive measures to the patient. Particular effort is made in this course to avoid burdening the student.

THEORY – General Pathology

CELL INJURY, INFLAMMATION & NEOPLASMS:

- a. Cells:** Brief outline of cell injury, hypertrophy, atrophy, degeneration, necrosis and gangrene
- b. Inflammation:** Definition, vascular and cellular phenomena, difference between transudate and exudates, granuloma
- c. Neoplasm:** Definition, characteristic features, benign and malignant tumor, spread of tumor, cancer pain syndrome.

VASCULAR & CARDIORESPIRATORY SYSTEM

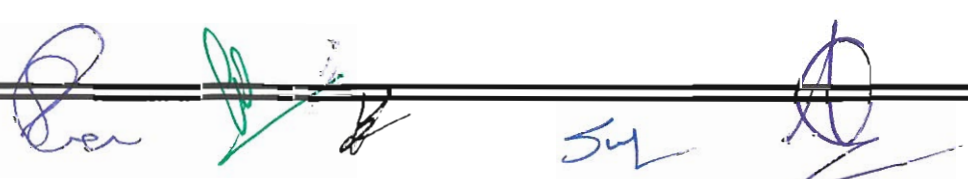
- a. Circulatory Disturbance:** Odema, Hemorrhage, Embolism, Thrombosis, Infraction, Shock, Volkmann's ischemic contracture
- b. Blood Disorder:** Concepts of Anemia, Bleeding disorder- Hemophilia
- c. CardioVascular System (CVS):** Etiopathogenesis and Gross pathology of Atherosclerosis, coronary heart disease, Rheumatic heart disease
- d. Respiratory System:** Chronic Bronchitis, Asthma, Bronchiectasis, Emphysema

BONES, JOINTS & MUSCULAR SYSTEM

- a. Bones:** Etiopathogenesis and gross pathology of following conditions: Rickets/Osteomalacia, Osteoporosis, Osteomyelitis, Hyperparathyroidism
- c. Joint:** Osteoarthritis, Rheumatoid Arthritis, Gout, Spondyloarthopathy (including Ankylosing Spondylitis), Osteonecrosis, Paget's disease
- d. Muscles:** Myositis ossificans, Myofascial Pain syndrome, Septic arthritis

HEPATO-BILIARY, ENDOCRINE & INTEGUMENTARY SYSTEM

- a. Hepato-Biliary System:** Jaundice Types, etiopathogenesis and diagnosis



b. Endocrine: Diabetes Mellitus, Non Neoplastic lesion of thyroid-Thyrotoxicosis, Myxedema

c.Skin: Brief outline of Scleroderma, Psoriasis, Pressure Ulcer, and Burn.

CENTRAL NERVOUS SYSTEM

a.CNS: Etiopathogenesis and gross pathology of following conditions- Meningitis, Encephalitis, Parkinson's, Amyotrophic lateral sclerosis, Ataxias, Multiple sclerosis, Neuropathies (Carcoat Marie Tooth disease, Compression and Entrapments, diabetics G.B. Syndrome), malformation, CVA, Extradural and Intra Dural Hematoma

b.Myopathies: Poliomyelitis, Myopathies, Myasthenia gravis, Muscular dystrophy.

PRACTICAL

1. Identify and interpret the gross and/or microscopic features of common disorders as given above.
2. Perform and interpret in a proper manner the basic clinico-pathological procedures.
3. Know the principles of collection, handling and dispatch of clinical samples from patients in a proper manner.

MICROBIOLOGY

THEORY

GENERAL MICROBIOLOGY:

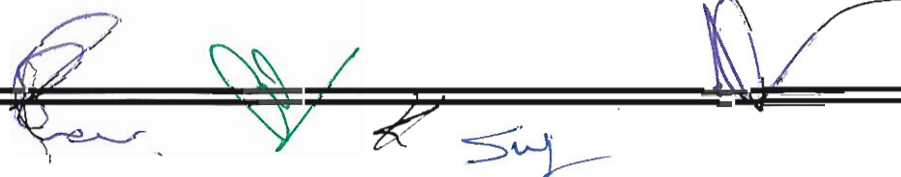
- a. Introduction and history of Medical Microbiology
- b. Morphology, Nutritional Requirements, Metabolism, Growth, Classification and identification of Bacteria
- c. Sterilizations and Disinfection

IMMUNOLOGY

- a. Infection, Immunity, Antigens, antibody, antigen-Antibody Reaction, Complement System
- b. Structure and Function of Immune system, Immune Response
- c. Immunodeficiency Diseases, Hypersensitivity, Autoimmunity

BACTERIOLOGY

- a. Staphylococcus, Streptococcus, Pneumococcus, Neisseria



- b. Corynebacterium, Clostridium, Bacillus
- c. Enterobacteriaceae, Pseudomonas, Vibrio
- d. Mycobacteria, Treponema

VIROLOGY

- a. General Characteristics and Classification of Virus
- b. Virus-Host Interaction
- c. DNA and RNA Virus
- d. Measles, Mumps, Rubella, Polio, Influenza, Rabies, Dengue, Hepatitis, HIV

MISCELLANEOUS

- a. Medical Mycology
- b. Parasitology
- c. Normal Microbial Flora of The Human Body
- d. Hospital Acquired Infection 5. Universal Precautions

Clinical/Applied Microbiology-

- a. Streptococcal infections: Rheumatic fever and Rheumatic heart disease, Meningitis.
- b. Tuberculosis
- c. Pyrexia of unknown origin, leprosy.
- d. Sexually transmitted diseases, Poliomyelitis.
- e. Hepatitis
- f. Acute-respiratory infections, Central nervous System infections, Urinary tract infections.
- g. Pelvic inflammatory disease, Wound infection, Opportunistic infections, HIV infection.
- h. Malaria, Filariasis, Zoonotic diseases.
- i. Culture and sensitivity tests
- j. Hospital acquired infections

PRACTICAL

SYLLABUS- BACHELOR OF PHYSIOTHERAPY
ATAL BIHARI VAJPAYEE MEDICAL UNIVERSITY, UP, LUCKNOW

1. Demonstration of Microscopes and its uses
2. Principles, uses and demonstration of common sterilization equipment
3. Demonstration of common culture media
4. Demonstration of motility by hanging drops method
5. Demonstration of Gram Stain, ZN Stain
6. Demonstration of Serological test: ELISA
7. Demonstration of Fungus

PHARMACOLOGY–

SUBJECT DESCRIPTION - This course introduces the student to basic pharmacology of common drugs used, their importance in the overall treatment including Physiotherapy. The student after completing the course will be able to understand the general principles of drug action and the handling of drugs by the body. The student will be aware of the contribution of both drug and physiotherapy factors in the outcome of treatment.

1. **General Pharmacology–**

- a. Introduction, Definitions, Nomenclature of drugs, Classification of drugs, Sources of drugs, Routes of drug administration, Distribution of drugs, Metabolism and Excretion of drugs Pharmacokinetics, Pharmacodynamics, Factors modifying drug response, Adverse effects.

2. **Autonomic Nervous system –**

- a. General considerations – The Sympathetic and Parasympathetic Systems, Receptors, Somatic Nervous System
- b. Cholinergic and Anticholinergic drugs, Adrenergic and Adrenergic blocking drugs, Peripheral muscle relaxants.

3. **Cardiovascular Pharmacology–**

- a. Drugs used in the treatment of heart failure: Digitalis, Diuretics, Vasodilators, ACE inhibitors Antihypertensive Drugs: Diuretics, Beta Blockers, Calcium Channel Blockers, ACE Inhibitors, Central Acting Alpha Agonists, Peripheral Alpha Antagonists, Direct acting Vasodilators
- b. Antiarrhythmic Drugs
- c. Drugs used in the treatment of vascular disease and tissue ischemia: Vascular Disease, Hemostasis Lipid-Lowering agents, Antithrombotics, Anticoagulants and Thrombolytics Ischemic Heart Disease – Nitrates, Beta-Blockers, Calcium Channel Blockers, Cerebral Ischemia Peripheral Vascular Disease.



4. Neuro pharmacology–

- a. Sedative – Hypnotic Drugs: Barbiturates, Benzodiazepines
- b. Antianxiety Drugs: Benzodiazepines, Other Anxiolytics
- c. Drugs Used in Treatment of Mood Disorders: Monoamine Oxidase Inhibitors, Tricyclic Antidepressants, Atypical Antidepressants, Lithium
- d. Antipsychotic drugs

5. Disorders of Movement-

- a. Drugs used in Treatment of Parkinson's disease
- b. Antiepileptic Drugs
- c. Spasticity and Skeletal Muscle Relaxants

6. Inflammatory/Immune Diseases-

- a. Non-narcotic Analgesics and Nonsteroidal Anti-Inflammatory Drugs: Acetaminophen, NSAIDs, Aspirin, Non aspirin NSAIDs, drug Interactions with NSAIDs
- b. Glucocorticoids: Pharmacological Uses of Glucocorticoids, adverse effects, Physiologic Use of Glucocorticoids
- c. Drugs Used in Treatment of Arthritic Diseases: Rheumatoid Arthritis, Osteoarthritis, Gout
- d. Drugs Used in the Treatment of Neuromuscular Immune/Inflammatory Diseases: Myasthenia gravis, Idiopathic Inflammatory Myopathies, systemic lupus Erythematosus, Scleroderma, Demyelinating Disease
- e. Respiratory Pharmacology: Obstructive Airway Diseases, Drugs used in Treatment of Obstructive airway Diseases, Allergic Rhinitis

7. Digestion and Metabolism-

- a. Gastrointestinal Pharmacology: Peptic Ulcer Disease, Constipation, Diarrhea Drugs Used in Treatment of Diabetes Mellitus: Insulin, Oral Hypoglycemic

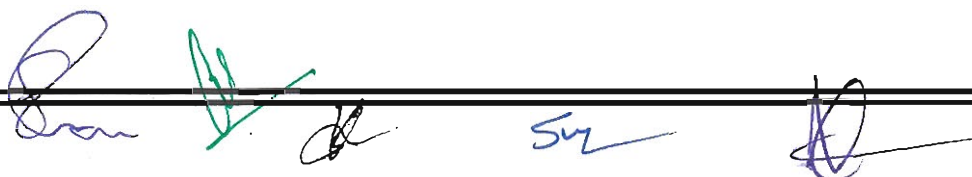
8. Geriatrics-

- a. Pharmacology and the geriatric Population: Adverse effects of special concern in the Elderly, Dementia, Postural hypotension.

9. Chemotherapy and Antibiotics

- a. General principles of chemotherapy. Sulfonamides & Fluoroquinolones. Beta – Lactam antibiotics – I (Penicillins) Beta – Lactam antibiotics – II (Cephalosporins) Macrolides aminoglycosides Tetracyclines and chloramphenicol (Broad spectrum antibiotics) Anti-Tuberculosis drugs Anti – Leprosy drugs

MEDICAL/PHYSIOTHERAPY LAW AND ETHICS




Legal and ethical considerations are firmly believed to be an integral part of medical practice in planning patient care.. Few of the important and relevant topics that need to focus on areas are as follows:

1. Medical ethics versus medical law – Definition – Goal - Scope
2. Introduction to Code of conduct
3. Basic principles of medical ethics – Confidentiality
4. Malpractice and negligence - Rational and irrational therapy
5. Autonomy and informed consent - Right of patients
6. Care of the terminally ill - Euthanasia
7. Organ transplantation
8. Medical diagnosis versus physiotherapy diagnosis.
9. Medico legal aspects of medical records – Medico legal case and type – Records and documents related to MLC - ownership of medical records - Confidentiality Privilege communication - Release of medical information – Unauthorized disclosure - retention of medical records – other various aspects.
10. Professional Indemnity insurance policy
11. Development of standardized protocol to avoid near miss or sentinel events
12. Obtaining informed consent.
13. Biomedical ethical principles
14. Code of ethics for physiotherapists
15. Ethics documents for physiotherapists
16. Laws affecting physiotherapy practice

INTRODUCTION TO NATIONAL HEALTH CARE DELIVERY SYSTEM IN INDIA

Students basic insight into the main features of the Indian health care delivery system and how it compares with the other systems of the world. Topics to be covered under the subject areas follow:

1. Introduction to health care delivery system: Health care delivery system in India at primary, secondary and tertiary care, Community participation in health care delivery system, Health system in developed countries. Private Sector, National Health Mission, National Health Policy, Issues in Health Care Delivery System in India
2. National Health Programme - Background objectives, action plan, targets, operations, achievements and constraints in various National Health



Programme.

3. Introduction to AYUSH system of medicine: Introduction to Ayurveda, Naturopathy, Unani, Siddha, Homeopathy

f. Need for integration of various system of medicine

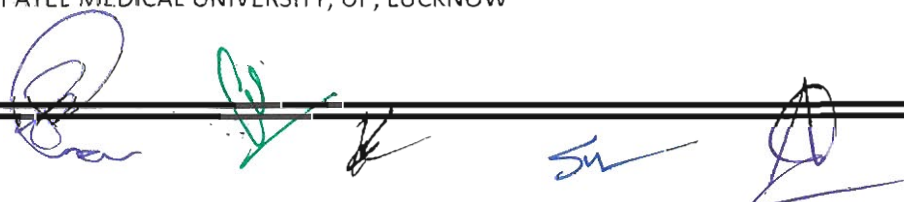
4. Health scenario of India - past, present and future

5. Demography & Vital Statistics- Demography – its concept, Vital events of life & its impact on demography, Significance and recording of vital statistics, Census & its impact on health policy.

CLINICAL EDUCATION

Students will be posted in rotation in the following areas/wards. The students will be clinically trained to provide physiotherapy care for the patients under supervision. They will be trained on bed side approach, patient assessment, performing special tests, identifying indications for treatment, ruling out contraindications, decision on treatment parameters, dosage and use relevant outcome measures under supervision. Evidence based practice will be part of training.

1. Physiotherapy OPD
2. Neurology, Neurosurgery & Neuro ICU
3. Community-PHC
4. Orthopedics
5. General Medicine & MICU
6. General Surgery & CTS ICU



EXERCISE THERAPY II

1. Joint mobilization: Definition – Mobilization, Manipulation, indications, limitations, contraindications and precautions, applications of Mobilization technique to various joints.

Principles of Maitland, Mulligan and Meckzi joint Manipulation techniques.

2. Resisted exercise: Definition – strength, power, endurance. Guiding principle of resisted exercise, determinants, types Manual and Mechanical Resistance Exercise, Isometric Exercise, Dynamic Exercise - Concentric and Eccentric, Dynamic Exercise - Constant and Variable Resistance, Isokinetic Exercise, Open-Chain and Closed-Chain Exercise, precautions, contraindications. Progressive Resistance Exercise - de Lormes, Oxford, MacQueen, Circuit Weight Training, Plyometric Training—Stretch-Shortening Drills, Isokinetic Regimens

4. Proprioceptive Neuromuscular Facilitation – Principles, Diagonal patterns of movements, Basic procedures, Upper Extremity Diagonal patterns, Lower Extremity Diagonal Patterns. Technique in PNF – Rhythmic Initiation, Repeated Contractions, Reversal of Antagonists, Alternating Isometrics, Rhythmic Stabilization.

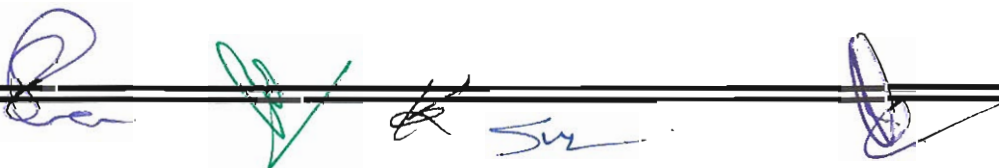
5. Aerobic Exercises – Definitions, Physiological response to Aerobic Exercise, Evaluation of aerobic capacity – exercise testing, Determinant of Aerobic Exercise, Physiological Changes with Aerobic Training, Aerobic Exercise Program, Applications of Aerobic Program in patients with chronic illness.

6. Hydrotherapy: Definitions, Goals and Indications, Precautions and Contraindications, Properties of water, Therapeutic Exercises in Hydrotherapy, Special equipments used.

7. Balance training: Definition and Key terms, Balance control, Components of balance, Balance Impairment, Examination of Impaired Balance, Balance training Exercises.

8. Posture: Normal Postural Control, Postural Alignment, Postural Stability, Postural Impairment and Mal-Alignment, Postural Training.

9. Breathing Exercises: Aims and Goals of Breathing Exercises, Procedures of Diaphragmatic Breathing, Segmental Breathing, Pursed-Lip Breathing, Preventing and Relieving Episodes of Dyspnea, Positive Expiratory Pressure Breathing, Respiratory Resistance Training, Glossopharyngeal Breathing. Exercises to mobilize the chest, Postural Drainage, Manual Technique used in Postural Drainage, Postural Drainage



Positions, Modified Postural Drainage.

10. Gait Training: Definition, Different methods of Gait Training, Gait Training in Parallel Bars, Walking Aids: Types: Crutches, Canes, Frames; Principles and training with walking aids.

11. Instrument Assisted Soft Tissue Mobilization : General Description of Inflammation and repair, Acute, Sub Acute, and Chronic stage, General Treatment Guidelines. Techniques and Principles of Mobilization and Manipulation. Techniques and Principles of Cupping therapy, IASTM and reflexology. Techniques and Principles of PRT (Position release techniques), MET (Muscle energy techniques), Active and Passive release of soft tissues, Butler concepts and techniques.


12. Bed Rest Complications: Indications of prolonged bed rest, Complications after a period of prolonged immobilization related to Neurological, Musculoskeletal, Cardiovascular and gastrointestinal systems, Prevention and treatment of the complications.

PRACTICAL

1. Joint Mobilisation to individual joint
2. Stretching of individual and group muscles
3. Resisted exercises to individual and group muscles, open and closed kinematic exercises.
4. PNF patterns to upper and lower limb.
5. Various types breathing exercises, chest mobilization exercises, postural drainage
6. Gait training with various walking aids

ELECTROTHERAPY-II

SUBJECT DESCRIPTION- In this course the student will learn the Principles, Techniques, and Effects, Indication, Contra-Indication and the dosage parameter for various indications of electrotherapeutic modalities in the restoration of physical function. The objective of this course is that after 220 hrs of lectures, demonstration, practical and clinics the student will be able to list the indications, contraindications,



dosages of electrotherapy modalities, demonstrate the different techniques, and describe their effects on various conditions.

Electro-diagnosis

1. FG Test
2. SD Curve: Methods of Plotting SD Curve, Apparatus selection, Characters of Normally innervated Muscle, Characters of Partially Denervated Muscle; Characters of Completely denervated Muscle, Chronaxie & Rheobase.
3. Nerve Conduction Velocity Studies
4. EMG: Construction of EMG equipment.
5. Bio-feedback.

Medium Frequency Currents

1. Interferential Therapy: Define IFT, Principle of Production of IFT, Static Interference System, Dynamic Interference system, Dosage Parameters for IFT, Electrode placement in IFT, Physiological & Therapeutic effects, Indications & Contraindications.
2. Russian Current
3. Rebox type Current

High Frequency Currents

3. Electromagnetic Spectrum.
4. SWD: Define shortwave, Frequency & Wavelength of SWD, Principle of Production of SWD, Circuit diagram & Production of SWD, Methods of Heat Production by SWD treatment, Types of SWD Electrode, Placement & Spacing of Electrodes, Tuning, Testing of SWD Apparatus, physiological and therapeutic effects, indications, contraindications, dangers, dosage parameters.
5. Long wave diathermy- Principles of application, Indications and Contraindications, Physiological effects.
6. LASER: Define LASER, Types of LASER, Principles of Production, and Production of LASER by various methods, Methods of application of LASER. Dosage of LASER, Physiological & Therapeutic effects of LASER, Safety precautions of LASER, Classifications of LASER, Energy density & power density.
7. Pulsed Electromagnetic Energy: Principles, Production & Parameters of PEME, Uses of PEME.
8. MicroWave Diathermy: Define Microwave, Wavelength & Frequency, Production of MW, Applicators, Dosage Parameters, Physiological & Therapeutic effects, Indications & Contraindications, Dangers of MWD.

Ultrasound:

Define Ultrasound, Frequency, PiezoElectric effects: Direct, Reverse, Production of US,

Treatment Dosage parameters: Continuous & Pulsed mode, Intensity, US Fields: Near field, Far field, Half value distance, Attenuation, Coupling Media, Thermal effects, Non-thermal effects, Principles & Application of US: Direct contact, Water bag, Water bath, Solid sterile gel pack method for wound. Uses of US, Indications & Contraindications, Dangers of Ultrasound, and Phonophoresis: Define Phonophoresis, Methods of application, commonly used drugs, Uses, Dosages of US.

Magnetotherapy

Magnetic Stimulation: Physiological Effect of Magnetism, Principles, Therapeutic uses, Indications & contraindication.

PRACTICALS

The student of Electrotherapy must be able to demonstrate the use of electrotherapy modalities applying the principles of electrotherapy with proper techniques, choice of dosage parameters and safety precautions.

13. Demonstrate the technique for patient evaluation—receiving the patient and positioning the patient for treatment using electrotherapy.
14. Collection of materials required for treatment using electrotherapy modalities and testing of the apparatus.
15. Demonstrate placement of electrodes for various electrotherapy modalities.
16. Electrical stimulation for the muscles supplied by the peripheral nerves
17. Faradism under Pressure for UL and LL
18. Plotting of SD curve with chronaxie and rheobase
19. Demonstrate FG test
20. Application of Ultrasound for different regions- various methods of application
21. Demonstrate treatment techniques using SWD, PSWD, PEMF, Microwave diathermy
22. Demonstrate treatment techniques using Magnetotherapy.
23. Demonstrate treatment method using IFT for various regions
24. Calculation of dosage and technique of application of LASER
25. Winding up procedure after any electrotherapy treatment method.
26. Demonstrate the technique of application of Long wave diathermy.

CLINICAL ORTHOPEDICS AND DIAGNOSTIC IMAGING

CLINICAL ORTHOPAEDICS

SUBJECT DESCRIPTION - This subject follows the basic science subjects to provide the knowledge about orthopedic conditions the therapist would encounter in their practice. The objective of this course is that after completion of the lectures and discussion the student will be able to demonstrate an understanding of orthopedic conditions causing disability, list the etiology, clinical features and methods of investigations and management.

1. Introduction: Introduction to orthopedics, Clinical examination in an orthopedic patient, Common investigative procedures, Radiological and Imaging techniques in Orthopedics, Inflammation and repair, Soft tissue healing.
2. Traumatology: Fracture: definition, types, signs and symptoms, Fracture healing Complications of fractures, Conservative and surgical approaches, Principles of management – reduction (open/closed, immobilization etc.), Subluxation/dislocations – definition, signs and symptoms, management (conservative and operative),
3. Fractures and Dislocations of Upper Limb:
4. Fracture of Spine
5. Fractures and Dislocations of Lower Limb
6. Fracture of Pelvis and Lower Limb
7. Soft Tissue Injuries such as sprains, strains, contusion, tendinitis, rupture, tenosynovitis, tendinosis, and bursitis. Mechanism of injury of each, clinical features, managements –conservative and surgical
8. Hand Injuries
9. Peripheral Nerve Injuries, Classification of Nerve Injuries ,Clinical features and management, including reconstructive surgery for Radial, median and ulnar nerve lesions, femoral nerve, Sciatic and lateral popliteal lesions. Brachial Plexus injuries including Erb's, Klumpke's and Crutch Palsy.
10. Amputations - Definition, levels of amputation of lower and upper limbs, indications, complications.
11. Traumatic Spinal Cord Injuries - Clinical features, complications, medical and surgical management of Paraplegia and Quadriplegia.
12. Deformities – Congenital and Acquired deformities.
13. Infective conditions: Osteomyelitis (Acute/chronic), Brodie's abscess, TB spine and major joints like shoulder, hip, knee, ankle, elbow etc.
14. Arthritic conditions: Pyogenic arthritis, Septic arthritis, Syphilitic infection of joints.
15. Bone Tumors: classification, clinical features, management - medical and surgical of the following tumors: Osteoma, Osteosarcoma, Osteochondroma,

Enchondroma, Ewing's sarcoma, Giant cell tumor, Multiple myeloma, Metastatic tumors. Perthes disease, Slipped Capital Femoral Epiphysis and Avascular Necrosis.

16. Inflammatory and Degenerative Conditions: Osteoarthritis, Rheumatoid arthritis, Ankylosing spondylitis, Gouty arthritis, Psoriatic arthritis, hemophilic arthritis, Still's disease (juvenile rheumatoid arthritis), Charcot's joints.
17. Connective Tissue Disorders – Systemic Lupus Erythematosus, Scleroderma, Dermatomyositis, Poliomyelitis, Mixed connective tissue Disease (MCTD)
18. Syndromes: Cervico brachial syndrome, Thoracic outlet syndrome, Vertebro-basilar syndrome, Scalenus syndrome, Costoclavicular syndrome, Levator scapulae syndrome, Piriformis syndrome.
19. Neuromuscular Disorders: Cerebralpalsy, Poliomyelitis, Spinal Dysraphism, Leprosy.
20. Cervical and Lumbar Pathology: Prolapsed intervertebral disc(PID), Spinal Canal Stenosis, Spondylosis (cervical and lumbar), Spondylolysis, Spondylolisthesis, Lumbago/Lumbosacral strain, Sacralisation, lumbarisation, Coccydynia, Hemivertebra.
21. Orthopedic Surgeries: Arthrodesis, Arthroplasty (partial and total replacement), Osteotomy, External fixators, Spinal stabilization surgeries (Harrington's, Luque's, Steffi plating) etc., Limb reattachments.
22. Regional Conditions:
 - a. Shoulder: Periarthritic shoulder (adhesive capsulitis), Rotator cuff tendinitis, Supraspinatus Tendinitis, Infraspinatus Tendinitis, Bicipital Tendinitis, Subacromial Bursitis.
 - b. Elbow: Tennis Elbow, Golfer's Elbow, Olecranon Bursitis (student's elbow), Triceps Tendinitis.
 - c. Wrist and Hand: De Quervain's Tenosynovitis, Ganglion, Trigger Finger/Thumb, Mallet Finger, Carpal Tunnel Syndrome, Dupuytren's Contracture.
 - d. Pelvis and Hip: IT Band Syndrome, Piriformis Syndrome, Trochanteric Bursitis.
 - e. Knee: Osteochondritis Dissecans, Prepatellar and Suprapatellar Bursitis, Popliteal Tendinitis, Patellar Tendinitis, Chondromalacia Patella, Plica Syndrome, Fat Pad Syndrome (Hoffa's syndrome).
 - f. Ankle and Foot: Ankle Sprains, Plantar Fasciitis/Calcaneal Spur, Tarsal Tunnel Syndrome, Achilles Tendinitis, Metatarsalgia, Morton's neuroma.

DIAGNOSTIC IMAGING

THEORY

Introduction of types of imaging are most commonly use in orthopaedics and traumatology

1. **X-ray**-Indication,Contraindication,Advantages,Disadvantages,Common views for different joint,spine and bones,X-ray image reading, clinicoradiological correlation
2. **CT-Scan**- Indication,Contraindication,Advantages,Disadvantages,Types,image and report reading, clinicoradiological correlation
3. **ColorDopplerUltrasound**- Indication,Contraindication,Advantages,Disadvantages for musculoskeletal structure,Types, and report reading, clinicoradiological correlation
4. **MRI**-Indication,Contraindication,Advantages,Disadvantages,Types,image sequence,for spine knee and shoulder,image and report reading, clinicoradiological correlation
5. **BoneScan**- Indication,contra indication,Advantages,Disadvantagesclinicoradiological correlation
6. **PET-Scan**-Indication contra indication,clinicoradiological correlation
7. **BMD**-Indication contra indication and reports correlation with physical findings

PRACTICAL CLINICAL ORTHOPEDICS AND DIAGNOSTIC IMAGING

1. General orthopaedic assessment (Subjective finding objective findings) for different orthopaedic disorders and trauma. Documentation of subjective and objective findings for different orthopaedic disorders and trauma. Interpretation of X-ray,MRI ,CT scan
Interpretation of Bone scan PET Scan Color doppler ultrasound reports.
2. Spends 6 (six) hours in orientation programme in the ward/OPD in the third year. Learns basic orthopedic examination skills and bedside manners. During this period he/she - Learns bedside history taking in ward, OT exposures and casualty. - Examine indoor (medical; preoperative and postoperative) patients learn examination, principles of treatment and techniques of traction would care and splintage - Attends OPD, operation theatre and emergency operations for acclimatization. - Attends ward rounds. - Participates in the teaching sessions in ward for bedside clinical
3. Learn basic skills such as application of splints, skin and skeletal traction, as well

as plaster slab and casts (including special casts such as CTEV cast, hip spica, shoulder spica, cylinder cast, patellar tendon bearing casts).

4. Undergraduate will attend case conference where the Residents are expected to work-up one long case and three short cases and present the same to a faculty member and discuss the management in its entirety.
5. X-Ray Classes- UG should attend x-ray classes held twice weekly in morning in which the radiologic features of various problems are discussed.
6. Case Presentation: UG should give case presentations in which special emphasis is made on the clinical findings and the radiological aspect of the case in the orthopaedic department.
7. UG should attend, during their posting, the Special Orthopaedic clinics such as Knee Clinic, Shoulder Clinic etc.,

GENERAL MEDICINE AND GENERAL SURGERY

SUBJECT DESCRIPTION - This subject follows the basic science subjects to provide the knowledge about relevant aspects of general medicine. The student will have a general understanding of the diseases the therapist would encounter in their practice. The objective of this course is that the student will be able to list the etiology, pathology, clinical features and treatment methods for various medical conditions. Infection : Effects of Infection on the body – Pathology – source and spread of infection – vaccinations – generalized infections – rashes and infection – food poisoning and gastroenteritis - Sexually transmitted diseases – HIV infections and Aids.

1. Poisoning: Clinical features – general management – common agents in poisoning – pharmaceutical agents – drugs of misuse – chemical pesticides - Envenomation.
2. Food and Nutrition: Assessment – Nutritional and Energy requirements; Deficiency diseases – clinical features and treatment; Protein – Energy Malnutrition: Clinical features and treatment; Obesity and its related disorders: Causes – Complications – benefits of weight loss – management of Obesity – diet, exercise and medications.
3. Endocrine diseases: Common presenting symptoms of Endocrine disease – common classical disease presentations, clinical features and its management; Diabetes Mellitus: Etiology and pathogenesis of diabetes – clinical manifestations of the disease – management of the disease – Complications of diabetes.
4. Diseases of the blood: Examinations of blood disorders – Clinical manifestations of blood disease; Anemia – signs and symptoms – types and management ; Hemophilia - Cause – clinical features severity of disease – management – complications due to repeated hemorrhages – complications due to therapy.



5. Diseases of the digestive system : Clinical manifestations of gastrointestinal disease – Etiology, clinical features, diagnosis, complications and treatment of the following conditions : Reflux Oesophagitis, Achlasia Cardia, Carcinoma of Oesophagus, GI bleeding, Peptic Ulcer disease, Carcinoma of Stomach, Pancreatitis, Malabsorption Syndrome, Ulcerative Colitis, Peritonitis, Infections of Alimentary Tract; Clinical manifestations of liver diseases - Aetiology, clinical features, diagnosis, complications and treatment of the following conditions: Viral Hepatitis, Wilson's disease, Alpha 1-antitrypsin deficiency, Tumors of the Liver, Gallstones, Cholecystitis.
6. Diseases of the Skin: Examination and clinical manifestations of skin diseases; Causes, clinical features and management of the following skin conditions: Leprosy, Psoriasis, and Pigmentary Anomalies, Vasomotor disorders, Dermatitis, Coccal and Fungal Parasitic and Viral infections.
7. Pediatrics : Problems and management of LBW infants, Perinatal problems and management, Congenital abnormalities and management, Respiratory conditions of childhood, Cerebral Palsy - causes, complications, clinical manifestations, treatment ; Spina Bifida - management and treatment, Epilepsies - types, diagnosis and treatment; Recognizing developmental delay, common causes of delay ; Orthopedic and Neuromuscular disorders in childhood, clinical features and management ; Sensory disorders - problems resulting from loss of vision and hearing ; Learning and behavioural problems - Hyperactivity, Autism, Challenging behaviours, Educational delay, The Clumsy Child.
8. Psychiatric Disorders: Classifications, Causes, Clinical manifestations and treatment methods used in Psychiatry, Modalities of psychiatric treatment, Psychiatric illness and physiotherapy, Brief description of Etio-pathogenesis, manifestations, and management of psychiatric illnesses – Anxiety neurosis, Depression, Obsessive compulsive neurosis, Psychosis, Maniac-depressive psychosis, Post-traumatic stress disorder, Psychosomatic reactions: Stress and Health, theories of Stress - Illness.

Etio-pathogenesis, manifestations, and management of psychiatric illness

- a. Drug dependence and alcoholism,
- b. Somato form and Dissociative Disorders – conversion reactions, Somatization, Dissociative Amnesia, and Dissociative Fugue,
- c. Personality disorders
- d. Child psychiatry - manifestations, and management of childhood disorders – attention deficit syndrome and behavioral disorders.
- e. Geriatric psychiatry.

GENERAL SURGERY

SYLLABUS- BACHELOR OF PHYSIOTHERAPY
ATAL BIHARI VAJPAYEE MEDICAL UNIVERSITY, UP, LUCKNOW

SUBJECT DESCRIPTION - This subject follows the basic science subjects to provide the knowledge about relevant aspects of general surgery. The student will have a general understanding of the surgical conditions the therapist would encounter in their practice. The objective of this course is that after 60hrs of lectures and discussion the student will be able to list the indications for surgery, etiology, clinical features and surgical methods for various conditions.

GENERAL SURGERY INCLUDING BURNS AND PLASTIC SURGERY

1. Fluid, Electrolyte and Acid-Base disturbances – diagnosis and management; Nutrition in the surgical patient; Wound healing –basic process involved in wound repair, basic phases in the healing process, clinical management of wounds, factors affecting wound healing, Scars – types and treatment, Hemostasis– components, hemostatic disorders, factors affecting bleeding during surgery, Transfusion therapy in surgery – blood components, complications of transfusion; Surgical Infections; General Post–Operative Complications and its management.
2. Reasons for Surgery; Types of anaesthesia and its effects on the patient; Types of Incisions; Clips Ligatures and Sutures; General Thoracic Procedures – Radiologic Diagnostic procedures, Endoscopy – types, Biopsy – uses and types, Overview and Drainage systems and tubes used in Surgery.
3. Definition, Indication, Incision, Physiological changes and Complications following Common operations like Cholecystectomy, Colostomy, Ileostomy, Gastrectomy, Hernias, Appendicectomy, Mastectomy, Nephrectomy, Prostatectomy.
4. Burn: Definition, Classification, Causes, Prevention, Pathological changes, Complications, Clinical Features and Management, Skin Grafts – Types, Grafting Procedures, Survival of Skin Graft; Flaps – Types and uses of Flaps.
5. ENT: Common problems of ear, otitis media, Otosclerosis, functional achonia and deafness, management facial palsy classification, medical and surgical management of lower motor neuron type of facial palsy.
6. Ophthalmology: Ophthalmologic surgical conditions, refraction's, conjunctivitis, glaucoma, corneal ulcer, iritis, cataract, retinitis, detachment of retina, defects of extra-ocular muscles – surgical management.
7. Surgical Oncology – Cancer – definition, types, clinical manifestations of cancer, Staging of Cancer, surgical procedures involved in the management of cancer.
8. Obstetrics and Gynecology: High risk pregnancy, prenatal and postnatal common complications , investigation and management. Prolapse of uterus and vagina. Principle of common gynaecological operations:

hysterectomy, D&C, D&E, Pap smear, pelvic repair, caesarian section, nephrectomy, Hysterosalphyngography, Dilatation and Curettage, Laproscopy, Colposcopy, Hysterectomy. Carcinoma of female reproductive organs – surgical management in brief. Mastectomy – Simple, radical, Hysterectomy.

9. Incontinence – Types, Causes, Assessment and Management.

PRACTICAL

The goal of the undergraduate training in general medicine is to provide such knowledge, skills and behavioral attributes that may enable the graduating student to function effectively in a bedside setting. The Clinical training occurs for 50 days posting in 5 batches of about 12 students each at the medical out-patient department. Time: 9 a.m. – 12 noon At the end of training, each student must be able to:


1. Understand the various manifestations of infectious and non-infectious diseases.
2. Understand the basic principle of history taking and clinical examinations.
3. Elicit a detailed history, perform a thorough physical examination including mental status
4. Examination of an unconscious patient.
5. Correlate the clinical symptoms and physical signs to make a provisional anatomical, physiological, etiopathological diagnosis along with the functional disability and suggest relevant investigation.
6. Interpret reasonably the relevant investigations.
7. Professionally present and discuss the principles involved in the management of the patient, first line management and outline short-term and long term management.
8. Provide Basic Life Support in acute medical emergencies like acute myocardial infarction, acute pulmonary oedema, acute anaphylactic and hypovolemic shock, status asthmaticus, tension pneumothorax, status epilepticus, hyperpyrexia, haemoptysis, gastro-intestinal bleeding, diabetic coma, electric shock, drowning, snake bites, common poisoning etc.
9. Acquire the skills to perform minor procedures under supervision like – IV cannulation, insertion of nasogastric tube, urinary bladder catheterization, use of peak flow meter, doing an ECG etc.
10. Students are supposed to complete the logbook and signed by faculty after every clinical case discussion. Their logbook will be evaluated at the time of examination.

NEUROLOGY & NEUROSURGERY

SUBJECT DESCRIPTION – This subject follows the basic science subjects to provide the knowledge about relevant aspects of neurology & neurosurgery. The student will have a general understanding of the diseases the therapist would encounter in their practice. The objective of this course is that after 60hrs of lectures and discussion the student will be able to list the etiology, pathology, and clinical features

and treatment methods for various neurological conditions.

1. Disorders of function in the context of Pathophysiology, Anatomy in Neurology and Cortical Mapping.
2. Classification of neurological involvement depending on level of lesion.
3. Neurological assessment: Principles of clinical diagnosis, higher mental function, assessment of brain & spinal cord function, evaluation of cranial nerves and evaluation of autonomic nervous system.
4. Investigations: principles, methods, views, normal/abnormal values/features, types of following investigative procedures - skull x-ray, CT, MRI, evoked potentials, lumbar puncture, CSF examination, EMG, NCV.
5. Neuro-ophthalmology: Assessment of visual function – acuity, field, colour vision, Pupillary reflex, accommodation reflex, abnormalities of optic disc, disorders of optic nerve, tract, radiation, occipital pole, disorders of higher visual processing, disorders of pupil, disorders of eye movements, central disorders of eye movement.
6. Deafness, vertigo, and imbalance: Physiology of hearing, disorders of hearing, examination & investigations of hearing, tests of vestibular function, vertigo, peripheral vestibular disorders, central vestibular vertigo.
Lower cranial nerve paralysis – Etiology, clinical features, investigations, and management of following disorders - lesions in trigeminal nerve, trigeminal neuralgia, trigeminal sensory neuropathy, lesions in facial nerve, facial palsy, bell's palsy, hemifacial spasm, Glossopharyngeal neuralgia, lesions of Vagus nerve, lesions of spinal accessory nerve, lesions of hypoglossal nerve, Dysphagia – swallowing mechanisms, causes of dysphagia, symptoms, examination, and management of dysphagia.
7. Cerebro-vascular diseases: Define stroke, TIA, RIA, stroke in evolution, multi infarct dementia and Lacunar infarct, Classification of stroke – Ischemic, hemorrhagic, venous infarcts, Risk factors, cause of ischemic stroke, causes of hemorrhagic stroke, Classification of hemorrhagic stroke, classification of stroke based on symptoms, stroke syndrome, investigations, differential diagnosis, medical and surgical management.
8. Head injury: Etiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications.
9. Higher cortical, neuro psychological and neurobehavioral disorders: Causes of blackouts, physiological nature of Epilepsy, classification, clinical features, investigations, medical & surgical management of following disorders – Non-epileptic attacks of childhood, Epilepsy in childhood, Seizures, and Epilepsy syndromes in adult, Classification and clinical features of Dyssomnias, Parasomnias, Dementia, Obsessive – compulsive disorders. Neural basis of consciousness, causes & investigations of Coma, criteria for diagnosis of



Brain death, Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, management of Perceptual disorders and Speech disorders.

10. Movement disorders: Definition, etiology, risk factors, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Parkinson's disease, Dystonia, Chorea, Ballism, Athedosis, Tics, Myoclonus and Wilson's disease.
11. Cerebellar and coordination disorders: Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, management of Congenital ataxia, Friedreich's ataxia, Ataxia telangiectasia, Metabolic ataxia, Hereditary cerebellar ataxia, Tabes dorsalis and Syphilis.
12. Spinal cord disorders: Functions of tracts, definition, etiology, risk factors, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Spinal cord injury, Compression by IVD prolapse, Spinal epidural abscess, Transverse myelitis, Viral myelitis, Syringomyelia, Spina bifida, Sub acute combined degeneration of the cord, Hereditary spastic paraplegia, Radiation myelopathy, Progressive encephalomyelitis, Conus medullaris syndrome, Bladder & bowel dysfunction, and Sarcodosis.
13. Brain tumors and spinal tumors: Classification, clinical features, investigations, medical and surgical management.
14. Infections of brain and spinal cord: Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders – Meningitis, Encephalitis, Poliomyelitis and Post-polio syndrome, Complications of systemic infections on nervous system – Septic encephalopathy, AIDS, Rheumatic fever, Brucellosis, Tetanus, and Pertussis.
15. Motor neuron diseases: - Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications of following disorders - Amyotrophic lateral sclerosis, Spinal muscular atrophy, Hereditary bulbar palsy, Neuromyotonia and Post-irradiation lumbosacral polyradiculopathy.
16. Multiple sclerosis - Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications.
17. Disorders of neuromuscular junction – Etiology, classification, signs & symptoms, investigations, management, of following disorders Myasthenia gravis, Eaton-Lambert syndrome, and Botulism.

Muscle diseases: Classification, investigations, imaging methods, Muscle

biopsy, Management of muscle diseases, genetic counseling, Classification, etiology, signs & symptoms of following disorders – Muscular dystrophy, Myotonic dystrophy, myopathy, Non-dystrophic myotonia.

18. Polyneuropathy – Classification of Polyneuropathies, Hereditary motor sensory neuropathy, hereditary sensory and Autonomic neuropathies, Amyloid neuropathy, acute idiopathic Polyneuropathies, Guillain-Barre syndrome - Causes, clinical features, management of GBS, Chronic Idiopathic Polyneuropathies, diagnosis of polyneuropathy, nerve biopsy.
19. Focal peripheral neuropathy: Clinical diagnosis of focal neuropathy, neurotmesis, Axonotmesis, Neuropraxia, Etiology, risk factors, classification, neurological signs & symptoms, investigations, management, of following disorders – RSD, Nerve tumors, Brachial plexus palsy, Thoracic outlet syndrome, Lumbosacral plexus lesions, Phrenic & Intercostal nerve lesions, Median nerve palsy, Ulnar nerve palsy, Radial nerve palsy, Musculocutaneous nerve palsy, Anterior & Posterior interosseous nerve palsy, Axillary nerve palsy, Long thoracic nerve palsy, Suprascapular nerve palsy, Sciatic nerve palsy, Tibial nerve palsy, Common peroneal nerve palsy, Femoral nerve palsy, Obturator nerve palsy, Pudendal nerve palsy.
20. Paediatric neurology: Neural development, Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders - Cerebral palsy, Hydrocephalus, Arnold-chiari malformation, Basilar impression, Klippel-Feil syndrome, Achondroplasia, Cerebral malformations, Autism, Dandy walker syndrome and Down's syndrome.
21. Toxic, metabolic and environmental disorders: Etiology, risk factors, classification, neurological signs & symptoms, investigations, management, of following disorders – Encephalopathy, Alcohol toxicity, Recreational drug abuse, Toxic gases & Asphyxia, Therapeutic & diagnostic agent toxicity, Metal toxicity, Pesticide poisoning, Environmental & physical insults, Plant & Fungal poisoning, Animal poisons, & Complications of organ transplantation.
22. Introduction, Indications and Complications of following Neurosurgeries: Craniotomy, Cranioplasty, Stereotactic surgery, Deep brain stimulation, Burr-hole, Shunting, Laminectomy, Hemilaminectomy, Rhizotomy, Microvascular decompression surgery, Endarterectomy, Embolization, Pituitary surgery, Ablative surgery - Thalamotomy and Pallidotomy, Coiling of aneurysm, Clipping of aneurysm, and Neural implantation.

PRACTICAL

The student should be exposed to all kinds of nerve injuries as regards their recognition & principles of management, cerebral palsy and acquired neurologic conditions such as

SYLLABUS- BACHELOR OF PHYSIOTHERAPY

ATAL BIHARI VAJPAYEE MEDICAL UNIVERSITY, UP, LUCKNOW

post polio residual paralysis. Disorders of Spine - The student is expected to be familiar with various kinds of spinal disorders such as scoliosis, kypho-scoliosis, spinal trauma, prolapsed intervertebral disc and infections (tuberculosis and pyogenic) as regards their clinical presentations and principles of management. The following practical classes should be held:

1. Neurological subjective assessment in detail (Demographic data, Chief complain, History)
2. Neurological Objective assessment in detail (Gait, Balance, Coordination)
3. Sensory Examination in detail (Dermatome, Superficial and deep sensation, Stereognosis, Graphesthesia, two point discrimination, position sense)
4. Motor Examination (Muscle bulk, Muscle power, Muscle tone, superficial and deep reflexes)
5. Brain CT and MRI image interpretation
6. EEG Interpretation
7. NCV and EMG interpretation
8. Interpretation of laboratory findings (Blood, CSF)
9. Documentation of subjective and objective findings for different neurological and neurosurgical cases .

CARDIOLOGY AND PULMONOLOGY

SUBJECT DESCRIPTION - Following the basic science and clinical science course, this course introduces the Student in cardio-thoracic conditions which commonly cause disability.

The objective of this course is that after lectures and demonstrations in addition to clinics the student will be able to demonstrate an understanding of Cardio-thoracic conditions causing disability and their management. Particular effort is made in this course to avoid burdening the student with any detail pertaining to diagnosis which will not contribute to their understanding of the limitations imposed by cardiovascular pathology on the functioning of the individual.

1. Anatomy and Physiology
 - a. Respiratory system: Upper respiratory tract, Lower respiratory tract – Trachea, Bronchial tree, Bronchopulmonary segments, Respiratory unit, hilum of lung, Muscles of respiration, Pleura, intrapleural space, intrapleural pressure, surfactant, Mechanics of respiration – Chest wall movements, lung & chest wall compliance, V/Q relationship, airway resistance, Respiratory centre, Neural & chemical regulation of respiration, Lung volumes and lung capacities, Spirometer, lung function test, Pulmonary circulation, Lung sounds, cough reflex

- b. Cardiovascular systems: Chambers of heart, semilunar and atrioventricular valves, Coronary circulation, conductive system of heart, Cardiac cycle, ECG, Heart sounds, Blood pressure, pulse, cardiac output
2. Cardiovascular system diseases:
- a. Define, etiology, pathogenesis, clinical features, complications,
 - b. Conservative and surgical management of the following conditions
 - i. Ischemic heart disease
 - ii. Myocardial infarction
 - iii. Heart failure
 - iv. Cardiac arrest
 - v. Rheumatic fever
 - vi. Hypertension
 - vii. Infective endocarditis
 - viii. Myocarditis & cardiomyopathy

Examination of the Cardiovascular System Investigations: ECG, Exercise Stress Testing, Radiology; Clinical manifestations of Cardiovascular disease; Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following diseases and disorders of the heart: Pericarditis, Myocarditis, Endocarditis, Rheumatic Fever – resulting in valve disorders, Ischemic Heart Disease, Coronary Valve Disease, Congenital disorders of the Heart, Cardiac Arrest; Examination and Investigations of diseases of arteries and veins; Hypertension: Definition, causes, classification, types, assessment, investigations and management.

- c. Disorders of the Heart – Definition, Clinical features, diagnosis and choice of management for the following disorders : Congenital Heart diseases – Acyanotic congenital heart disease & Cyanotic congenital heart disease: Patent Ductus Arteriosus, Coarctation of Aorta, Atrial Septal Defect, Ventricular Septal Defect, Tetralogy of Fallot, Transposition of Great Vessels; Acquired Heart Disease – Mitral Stenosis & Insufficiency, Aortic Stenosis and Insufficiency, Ischemic Heart Disease – Coronary Artery Disease, Cardiac tumors.
3. Respiratory System
- a. Respiratory Disease: Examination of the Respiratory System – Investigations: Chest Radiographs, Pulmonary Function Testing, Arterial Blood Gas Analysis; Clinical manifestations of Lung disease; Patterns of lung disease – Chronic Obstructive Lung Disease and



Restrictive Lung Disease; Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following lung diseases: Chronic Bronchitis, Emphysema, Asthma, Bronchiectasis, Cystic Fibrosis, Upper Respiratory Tract Infections, Pneumonia, Tuberculosis, Fungal Diseases, Interstitial Lung Diseases, Diseases of the pleura, diaphragm and chest wall; Respiratory failure – Definition, types, causes, clinical features, diagnosis and management.

- b. Chest wall disorders - Definition, Clinical features, diagnosis and choice of management for the following disorders – chest wall deformities, chest wall tumors, Spontaneous Pneumothorax, Pleural Effusion, Empyema Thoracis, Lung abscess, Hemothorax, Cardiac Tamponade, Tracheobronchial disruption, Aortic disruption, Diaphragmatic disruption, Esophageal disruption, Cardiac and Pulmonary Contusions, Bronchiectasis, Tuberculosis, Bronchogenic Carcinoma, Bronchial Adenomas, Metastatic tumors of the Lung, tracheal Stenosis, Congenital tracheomalacia, Neoplasms of the trachea, Lesions of the Mediastinum, Carcinoma of the female breast.

4. Thoracic surgeries – Thoracotomy – Definition, Types of Incisions with emphasis to the site of incision, muscles cut and complications, Lung surgeries: Pneumonectomy, Lobectomy, segmentectomy – Indications, Physiological changes and Complications; Thoracoplasty, Pleurectomy, Pleurodesis and Decortication of the Lung, Cardiac surgeries – An overview of the Cardio-Pulmonary Bypass Machine – Extra cardiac Operations, Closed Heart surgery, Open Heart surgery, Transplant Surgery – Heart, Lung and Kidney – Indications, Physiological changes and Complications.

5. Diseases of the Arteries and Veins: Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following diseases: Arteriosclerosis, Atherosclerosis, Aneurysm, Buerger's disease, Raynaud's Disease, Thrombophlebitis, Deep Vein Thrombosis, Pulmonary Embolism, Varicose Veins.

PRACTICAL

During clinical posting undergraduates will be posted in specialised department like cardiology and pulmonary medicine, ICUs etc. The purpose of clinical training for physiotherapy students is not to make specialists out of all students, but to give students knowledge of basic concepts used. The following practical classes should be held

1. Teach them skills of airway management and vascular access that may be useful to them in other areas of practice.
2. The physiotherapist should have a good knowledge of what the drugs/anesthetic will do to the patient, even though the physiotherapist does not administer it him or herself.
3. The student, therefore, should observe and study the physiological changes which

take place in the patient. When these changes are of sufficient magnitude, they become complications or toxic effects. The student should learn what these are, how they are caused, and how they may present and be treated. Cardiopulmonary assessment in detail.

4. Emphasis should be laid on good preoperative preparation. Students should learn basic techniques of maintaining a clear airway and giving assisted or artificial ventilation.
5. They should also learn how to position the patient's head, how to hold the chin and how to insert an airway.
6. Students should learn enough about the ventilator machine. In addition to these technical accomplishments, the student may have the opportunity to administer either general or specific physiotherapy treatment under the direct and constant supervision of a member of the staff.
7. Simulation on Human patient Simulator (HPS) is ideal to teach many aspects of applied physiology and pharmacology.
8. Review principles of and teach skills in resuscitation (cardiopulmonary, cerebral, fluid and others).
9. Teach care of the unconscious patient, including airway and ventilation management.
10. Teach management of blood ,fluid, electrolyte balance , and metabolic disturbances in the surgical patient, with specific emphasis on those derangements which are encountered in the anesthetized patient. Interpretation of laboratory findings.
11. Review management of acute and chronic pain problems.

RESEARCH METHODOLOGY & BIostatISTICS -

The objective of this module is to help the students understand the basic principles of research and methods applied to draw inferences from the research findings.

RESEARCH METHODOLOGY

1. Introduction to Research methodology: Meaning of research, objectives of research, Motivation in research, Types of research & research approaches, Research methods vs methodology, Criteria for good research, Problems encountered by researchers in India.
2. Research problem: Statement of research problem, Statement of purpose and objectives of research problem, Necessity of defining the problem
3. Research design: Meaning of research design, Need for research design, Features for good design, Different research designs, Basic principles of research design



4. Sampling Design: Criteria for selecting sampling procedure, Implications for sample design, steps in sampling design, characteristics of good sample design, Different types of sample design
5. Measurement & scaling techniques: Measurement in research - Measurement scales, sources of error in measurement, Technique of developing measurement tools, Meaning of scaling, its classification, important scaling techniques.
6. Methods of data collection: collection of primary data, collection data through questionnaires & schedules, Difference between questionnaires & schedules.
7. Sampling fundamentals, need for sampling & some fundamental definitions, important sampling distributions.
8. Processing & analysis of data: Processing operations, problems in processing, Types of analysis, Statistics in research, Measures of central tendency, Dispersion, Asymmetry, relationship.
9. Testing of hypothesis: What is hypothesis? Basic concepts concerning testing of hypothesis, Procedure of hypothesis testing, measuring the power of hypothesis test, Tests of hypothesis, limitations of the tests of hypothesis
10. Computer technology: Introduction to Computers, computer application in research, computers & researcher.
11. Format of scientific documents (Structure of protocols, formats reporting in scientific journals, systematic reviews and meta-analysis).
12. Research Ethics and Brief introduction to Clinical trials registry.

BIOSTATISTICS

1. Introduction: Meaning, definition, characteristics of statistics, Importance of the study of statistics, Branches of statistics, Statistics and health science including physiotherapy, parameters and Estimates, Descriptive and inferential statistics, Variables and their types, Measurement scales.
2. Tabulation of Data: Basic principles of graphical representation, Types of diagrams – histograms, frequency polygons, smooth frequency polygon, cumulative frequency curve, Normal probability curve.
3. Measure of Central Tendency: Need for measures of central Tendency, Definition and calculation of mean – ungrouped and grouped, Meaning, interpretation and calculation of median ungrouped and grouped, Meaning and calculation of mode, Comparison of the mean, median and mode, Guidelines for the use of various measures of central tendency.
4. Probability and Standard Distributions: Meaning of probability of standard distribution, the binomial distribution, the normal distribution, Divergence from normality – skewness, kurtosis.
5. Sampling techniques: Need for sampling – Criteria for good samples, Application of sampling in community, Procedures of sampling and sampling designs errors, Sampling variation and tests of significance.

6. Analysis of variance & covariance: Analysis of variance (ANOVA), what is ANOVA? Basic principle of ANOVA, ANOVA technique, Analysis of Covariance (ANACOVA).

INTRODUCTION TO QUALITY AND PATIENT SAFETY

1. Quality assurance and management- The objective of the course is to help students understand the basic concepts of quality in health Care and develop skills to implement sustainable quality assurance programs in the health system.
 - a. Concepts of Quality of Care, Quality Improvement Approaches, Standards and Norms, Quality Improvement Tools, Introduction to NABH guidelines
2. Basics of emergency care and life support skills-
Basic life support (BLS) is the foundation for saving lives following cardiac arrest. Fundamental aspects of BLS include immediate recognition of sudden cardiac arrest (SCA) and activation of the emergency response system, early cardiopulmonary resuscitation (CPR), and rapid defibrillation with an automated external defibrillator (AED). Initial recognition and response to heart attack and stroke are also considered part of BLS. The student is also expected to learn about basic emergency care including first aid and triage. Topics to be covered under the subject are as follows:
 - a. Vital signs and primary assessment
 - b. Basic emergency care – first aid and triage
 - c. Ventilations including use of bag-valve-masks (BVMs)
 - d. Choking, rescue breathing methods
 - e. One- and Two-rescuer CPR
 - f. Using an AED (Automated external defibrillator).
 - g. Managing an emergency including moving a patient

At the end of this topic, focus should be to teach the students to perform the maneuvers in the simulation lab and to test their skills with focus on airways management and chest compressions. At the end of the foundation course, each student should be able to perform and execute/operate on the above mentioned modalities.

3. Biomedical waste management and environment safety- The aim of this section will be to help prevent harm to workers, property, the environment and the general public. Topics to be covered under the subject are as follows:
 - a. Definition of BiomedicalWaste

- b. Waste minimization
 - c. BMW – Segregation, collection, transportation, treatment and disposal (including color coding) Liquid BMW, Radioactive waste, Metals/Chemicals/Drug waste
 - d. BMW Management & methods of disinfection
 - e. Modern technology for handling BMW
 - f. Use of Personal protective equipment (PPE)
 - g. Monitoring & controlling of cross infection (Protective devices)
4. Infection prevention and control - The objective of this section will be to provide a broad understanding of the core subject areas of infection prevention and control and to equip AHPs with the fundamental skills required to reduce the incidence of hospital acquired infections and improve health outcomes. Concepts taught should include–
- a. Evidence-based infection control principles and practices [such as sterilization, disinfection, effective hand hygiene and use of Personal protective equipment (PPE)],
 - b. Prevention & control of common healthcare associated infections,
 - c. Components of an effective infection control program, and
 - d. Guidelines (NABH and JCI) for Hospital Infection Control

PROFESSIONALISM AND VALUES

The module on professionalism will deliver the concept of what it means to be a professional and how the physiotherapy profession is different from a usual vocation. It also explains how relevant professionalism is in terms of the healthcare system and how it affects the overall patient environment.

1. Professional values - Integrity, Objectivity, Professional competence and due care, Confidentiality. Core values - Accountability, Altruism, Compassion/ caring, excellence, integrity, professional duties, social responsibility.
2. Personal values – ethical or moral values
3. Attitude and behavior – professional behavior, treating people equally
4. Code of conduct, professional accountability and responsibility, misconduct
5. Differences between professions and importance of team efforts
6. Cultural issues in the healthcare environment
7. Entry level healthcare practitioner, direct access, autonomy in profession, practitioner of practice and evidence based practice.

The five roles of the Physiotherapist-

1. The Physiotherapist as Patient/Client manager
Evaluation and diagnosis, Diagnosis as clinical decision making, Prognosis, Discharge planning and discontinuance of care, Discontinuance of care, Outcomes, Clinical decision making, Referral relationships, Interpersonal relationships, Ethical and legal issues, Informed consent, Managed care and fidelity.
2. The Physiotherapist as Consultant
Physiotherapy consultation, Building a consulting business, The consulting process, The skills of a good consultant, Trust in the consultant/client relationship, Ethical and legal issues in consultation, Components of a consulting agreement.
3. The Physiotherapist as Critical Inquirer
 - a. History of critical inquiry, Evidence-based practice, Outcomes research
 - b. Whose responsibility is research?, Roles of the staff physiotherapist in critical inquiry, Collaboration in clinical research, Ethical and legal issues in critical inquiry.
4. The Physiotherapist as Administrator
History of physiotherapy administration, Contemporary physiotherapy administration, Patient/client management, First-line management, Mid level managers and chief executive officers, Leadership, Ethical and legal issues.
5. The Physiotherapist as Educator
History of physiotherapy education, Contemporary educational roles of the physiotherapist, Teaching opportunities in continuing education, Academic teaching opportunities, Theories of teaching and learning in professional education, Ethical and legal issues in physiotherapy education.

CLINICAL EDUCATION

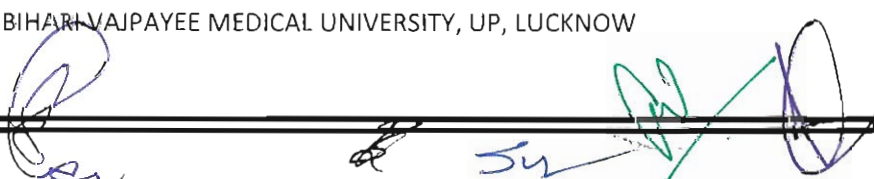
Students will be posted in rotation in the following areas/wards. The students will be clinically trained to provide physiotherapy care for the patients under supervision. They will be trained on bed side approach, patient assessment, performing special tests, identifying indications for treatment, ruling out contraindications, decision on treatment parameters, dosage and use relevant outcome measures under supervision. Evidence based practice will be part of training.

1. Physiotherapy OPD

SYLLABUS- BACHELOR OF PHYSIOTHERAPY
ATAL BIHARI VAJPAYEE MEDICAL UNIVERSITY, UP, LUCKNOW



2. Neurology, Neurosurgery & Neuro ICU
3. Community-PHC
4. Orthopedics
5. General Medicine & MICU
6. General Surgery & CTS ICU



PHYSIOTHERAPY IN ORTHOPEDICS

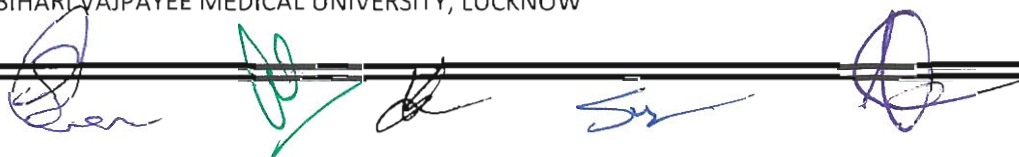
SUBJECT DESCRIPTION- The subject serves to integrate the knowledge gained by the students in orthopedics and traumatology with skills to apply these in clinical situations of dysfunction and musculoskeletal pathology. The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to do functional diagnosis and identify disabilities due to musculoskeletal dysfunction, plan and set treatment goals and apply the skills gained in exercise therapy and electrotherapy in these clinical situations to restore musculoskeletal function.

PT functional diagnosis and assessment for orthopedic conditions – SOAP format, Subjective-history taking, informed consent, personal, past, medical and socio economic history, chief complaints, history of present illness. Pain assessment - intensity, character, aggravating and relieving factors, site and location. Objective - on observation - body built swelling, muscle atrophy, deformities, posture and gait, On palpation- tenderness- grades, muscle spasm, swelling- methods of swelling assessment, bony prominences, soft tissue texture and integrity, warmth and vasomotor disturbances. On examination – ROM – active and passive, resisted isometric tests, limb length - apparent, true and segmental , girth measurement, muscle length testing - tightness, contracture and flexibility, manual muscle testing, peripheral neurological examination - dermatomes, myotomes and reflexes, special tests and functional tests, prescription of homeprogram, Documentation of case records, and follow up.

Fractures - types, classification, signs and symptoms, complications, Fracture healing – factors affecting fracture healing, Principles of fracture management - reduction - open and closed, immobilization - sling, cast, brace, slab, traction -manual, mechanical, skin, skeletal, lumbar and Cervical traction, external fixation, functional cast bracing, PT management in complications - early and late - shock, compartment syndrome, VIC, fat embolism, delayed and malunion, RSD, myositis ossificans, AVN, pressure sores etc. Physiotherapy assessment in fracture cases, Aims of PT management in fracture cases - short and long term goals, Principles of PT management in fractures – Guidelines for fracture treatment during period of immobilization and guidelines for treatment after immobilization period.

1. Specific fractures and dislocations: PT assessment and management of upper limb fractures and dislocations, PT assessment and management of lower limb fractures and

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- dislocations including pelvis, PT assessment and management spinal fractures.
2. Selection and application of physiotherapeutic techniques, maneuver's, modalities for preventive, curative and rehabilitative means in all conditions.
 3. Principles of various schools of thought in manual therapy (Briefly Maitland and Mckenzie).
 4. Degenerative and inflammatory conditions: Definition, signs and symptoms, clinical features, pathophysiology, radiological features, deformities, medical, surgical management, describe the PT assessment and management and home program for the following conditions – Osteoarthritis - emphasis mainly on knee, hip and hand, Rheumatoid Arthritis, Ankylosing spondylitis, Gout, Perthes disease, Periarthritis shoulder.
 5. Infective conditions: Definition, signs and symptoms, clinical features, pathophysiology, radiological features, medical, surgical management, Describe PT assessment and management for following conditions – Osteomyelitis – acute and chronic, Septic arthritis, pyogenic arthritis, TB spine and major joints- knee and hip.
 6. Define; review the postural abnormalities of spinal column, clinical features, and deformities, medical and surgical management, Describe PT assessment and management and home program.
 7. Deformities: Review in detail the causes, signs and symptoms, radiological features, medical and surgical management, Describe the PT assessment and management of the following conditions: Congenital: CTEV, CDH, Torticollis, pes planus, pes cavus and other common deformities, Acquired: scoliosis, kyphosis, coxa vara, genu varum, valgum and recurvatum.
 8. Cerebral palsy: Definition, etiology, classification, clinical features, complications, deformities, medical and surgical management and home program with special emphasis on carrying techniques, PT management after surgical corrections.
 9. Poliomyelitis: Definition, etiology, types, pathophysiology, clinical features, deformities, medical and surgical management, PT assessment and management after surgical corrections and reconstructive surgeries- emphasis on tendon transfer and home program.
 10. Leprosy: Definition, cause, clinical features, medical and surgical management, PT assessment, aims, and management after surgical procedures such as tendon transfer both pre and post

operatively.

11. Amputations: Definition, levels, indications, types, PT assessment, aims, management pre and post operatively PT management with emphasis on stump care and bandaging, Pre and post prosthetic training, checking out prosthesis, complications of amputations and its management.
12. Spinal conditions: Review the causes, signs and symptoms, investigations, radiological features, neurological signs. PT assessment, aims, and management and home program of the following conditions: Cervical spondylosis, Lumbar spondylosis, Spondylolisthesis, Spinal canal stenosis, Spondylolysis, Sacroiliac joint dysfunction, Sacralisation, Lumbarisation, Intervertebral disc prolapse, Coccydynia, Spina bifida occulta.
13. Effects of spinal traction, types of traction, modes of application, indications for spinal traction, contraindications, precautions, limitations of traction.
14. Osteoporosis- causes, predisposing factors, investigations and treatment.
15. Orthopedic surgeries: Pre and post-operative PT assessment, goals, precautions and PT management of following surgeries such as : Arthrodesis, Osteotomy, Arthroplasty - partial and Total - Excision arthroplasty, excision arthroplasty with implant, interpositional arthroplasty and Total replacement; Tendon transplant, Soft tissue release- tenotomy, myotomy, lengthening; Arthroscopy, Spinal stabilization, Reattachment of limbs, External fixators, Synovectomy.
16. Shoulder joint: Shoulder instabilities, TOS, RSD, Impingement syndrome - conservative and post-operative PT management. Total shoulder replacement and Hemi replacement. - Postoperative PT management. AC joint injuries – rehabilitation, Rotator cuff tears- conservative and surgical repair, Subacromial decompression- Post operative PT management.
17. Elbow and forearm: Excision of radial head - Post operative PT management. Total elbow arthroplasty-Post operative PT management.
18. Wrist and Hand: Total wrist arthroplasty, Repair of ruptured extensor tendons, Carpal tunnel syndrome, Flexor and extensor tendon lacerations-Post operative PT management.
19. Hip: Joint surgeries - hemi and Total hip replacement - Post operative PT management Tendonitis and bursitis - Management.
20. Knee: Lateral retinacular release, chondroplasty- Post operative management. Realignment of extensor mechanism, ACL and



PCL reconstruction surgeries - Post operative rehabilitation, Meniscectomy and meniscal repair - Post operative management. Plica syndrome, patellar dysfunction and Hoffa's syndrome- conservative management. TKR- rehabilitation protocol, Patellar tendon ruptures and Patellectomy- rehabilitation.

21. Ankle and foot: Ankle instability, Ligamentous tears- Postoperative management.
22. Applied Yoga in orthopedic conditions.

PRACTICAL- Practical shall be conducted for all the relevant topics discussed in theory in the following forms:

1. Bedside case presentations and case discussions
2. Labsessions consist of evaluation and assessment methods on student models, treatment techniques and practice sessions.

PHYSIOTHERAPY IN NEUROLOGY & PSYCHOSOMATIC DISORDER

SUBJECT DESCRIPTION- The subject serves to integrate the knowledge gained by the students in neurology and neurosurgery with skills to apply these in clinical situations of dysfunction and neurological pathology. The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to do functional diagnosis and identify disabilities due to neurological dysfunction, plan and set treatment goals and apply the skills gained in exercise therapy and electrotherapy in these clinical situations to restore neurological function.

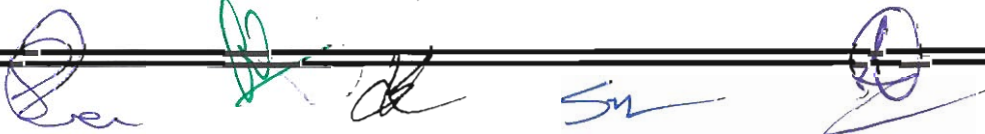
1. Neurological Functional diagnosis and Assessment: Required materials for examination, Chief complaints, History taking – Present, Past, medical, familial, personal histories, Observation, Palpation, Higher mental function – Consciousness, Orientation, Wakefulness, memory, Speech, Reading, Language, Writing, Calculations, Perception, Left right confusion, Reasoning, and Judgment, Motor Examination– Muscle power, Muscle tone, Spasticity, Flaccidity, Reflexes–Developmental reflexes, deep tendon reflexes, Superficial reflexes, Sensory examination– Superficial, Deep and Cortical sensations, Special tests– Romberg's, Kernig's sign, Brudzki sign, Tinels's sign, Slump test, Lehermitte's sign, Bell's Phenomenon, Gower's sign, Sun set sign, Battle's sign, Glabellar tap sign, etc, Balance examination, coordination examination, Gait analysis – Kinetics

& Kinematics (Quantitative & Qualitative analysis), Functional Analysis, Assessment tools & Scales – Modified Ashworth scale, Berg balance scale, FIM, Barthel index, Glasgow coma scale, Mini mental state examination, Rancho Los Amigos Scale for Head injury, APGAR score, ASIA scale, Reflex Grading, Differential diagnosis.

2. Neuro physiological Techniques – Concepts, Principles, Techniques, Effects of following Neurophysiological techniques: NDT, PNF, Vojta therapy, Rood's Sensory motor Approach, Sensory Integration Approach, Brunnstorm movement therapy, Motor relearning program, Contemporary task oriented approach, Muscle re-education approach and Constraint induced movement therapy.
3. Paediatric Neurology: Paediatric Examination, Developmental milestones, developmental reflexes, Neurodevelopmental screening tests, Evaluation & Management- History, Observation, Palpation, Milestone Examination, developmental reflex Examination, Higher mental function, cranial nerve examination, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neurophysiological approaches & Modalities in Risk babies, Minimum brain damage, Developmental disorders, Cerebral palsy, Autism, Down's Syndrome, Hydrocephalus, Chorea, Spina bifida, and syringomyelia.
4. Evaluation and Management of Brain and Spinal Cord Disorders : History, Observation, Palpation, Higher mental function, Cranial nerve examination, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neuro physiological approaches & Modalities in Cerebrovascular Accident, Meningitis, Encephalitis, Head Injury, Brain Tumors, Perceptual disorders, Amyotrophic lateral sclerosis and Multiple sclerosis.

Evaluation and Management of Cerebellar, Spinal Cord and Muscle Disorders : History, Observation, Palpation, Motor & Sensory examination, Reflex testing, differential Diagnosis,

SYLLABUS - BACHELOR OF PHYSIOTHERAPY



Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neuro physiological approaches & Modalities in Ataxia, Sensory Ataxia, Parkinson's disease, Muscular dystrophy (DMD), Myasthenia gravis, Eaton- Lambert syndrome, Spinal Tumors, Spinal cord injury, Transverse myelitis, Bladder & Bowel Dysfunction, Spinal muscular atrophies, Poliomyelitis, Post-Polio Syndrome.

5. Evaluation and Management of Peripheral Nerve Injuries and Disorders: History, Observation, Palpation, Motor & Sensory examination, Reflex testing, differential Diagnosis, Balance & Coordination examination, Gait analysis, Functional analysis, List of Problems & Complications, short & Long Term goals, Management of systemic complications, Management of Mechanical Complications, Use of various Neuro physiological approaches & Modalities in Hereditary motor sensory neuropathy, Guillain-Barre syndrome, Brachial plexus palsy, Thoracic outlet syndrome, Lumbosacral plexus lesions, Phrenic & intercostals nerve lesions, Median nerve palsy, Ulnar nerve palsy, Radial nerve palsy, Musculocutaneous nerve palsy, Anterior & Posterior interosseous nerve palsy, Axillary nerve palsy, Long thoracic nerve palsy, Suprascapular nerve palsy, sciatic nerve palsy, Tibial nerve palsy, Common peroneal nerve palsy, Femoral nerve palsy, Obturator nerve palsy, and Pudendal nerve palsy.
6. Assessment and management of Neurological gaits: Quantitative and Qualitative (Kinetic & Kinematics) analysis, List of Problems, short & Long Term goals, Management of following Neurological Gaits - Hemiplegic gait, Parkinson gait, High step gait, Hyperkinetic gait, Hypokinetic gait, Waddling gait, Scissoring gait, Spastic gait, Choreaform Gait, Diplegic Gait, and Myopathic Gait.
7. Pre and post-surgical assessment and treatment following conditions-Spinal disc herniation, Spinal stenosis, Spinal cord trauma, Head trauma, Brain tumors, Tumors of the spine, Spinal cord and peripheral nerves, Cerebral aneurysms, Subarachnoid hemorrhages, epilepsy, Parkinson's disease, Chorea, Hemiballism, Psychiatric disorders, Malformations of the nervous system, Carotid artery stenosis, Arteriovenous malformations, and Spina bifida.

8. Vertigo-Assessment and Management.
9. Applied Yoga in Neurological conditions.

PRACTICAL: Practical shall be conducted for all the relevant topics discussed in theory in the following forms:

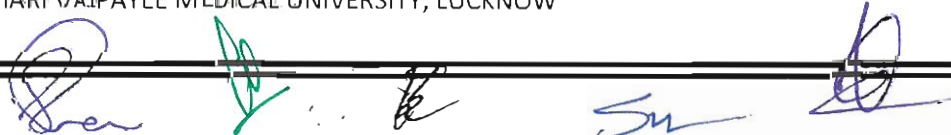
1. Bedside case presentations and case discussions
2. Lab sessions consist of evaluation and assessment methods on student models, treatment techniques and practice sessions.

PHYSIOTHERAPY IN CARDIOVASCULAR PULMONARY AND INTENSIVE CARE-

SUBJECT DESCRIPTION- The subject is designed to provide knowledge in functional diagnosis, assessing and planning physiotherapy interventions for various General, Medical and Surgical conditions. The student must be able to reassess the patient as necessary, to monitor the patient in regard to treatment, to monitor the patient's vital signs, student must know emergency drugs indication and contra-indication, care in intensive care unit (ICU) and to provide appropriate interventions to the patient.

THEORY-

1. Anatomical and Physiological differences between the Adult and Pediatric lung.
2. Bedside assessment of the patient- Adult & Pediatric.
3. Investigations and tests – Exercise tolerance Testing – Cardiac & Pulmonary, Radiographs, PFT, ABG, ECG, Hematological and Biochemical Tests.
4. Physiotherapy techniques to increase lung volume – controlled mobilization, positioning, breathing exercises, Neuro physiological Facilitation of Respiration, Mechanical aids – Incentive Spirometry, CPAP, IPPB.
5. Physiotherapy techniques to decrease the work of breathing – Measures to optimize the balance between energy supply and demand, positioning, Breathing re-education – Breathing control techniques, mechanical aids– IPPB, CPAP, BiPAP.
6. Physiotherapy techniques to clear secretions – Hydration, Humidification & Nebulisation, Mobilisation and Breathing exercises, Postural Drainage, Manual techniques – Percussion, Vibration and Shaking, Rib Springing, ACBT,



- Autogenic Drainage, Mechanical Aids – PEP, Flutter, IPPB, Facilitation of Cough and Huff, Nasopharyngeal Suctioning.
7. Drug therapy– Drugs to prevent and treat inflammation, Drugs to treat Bronchospasm, Drugs to treat Breathlessness, Drugs to help sputum clearance, Drugs to inhibit coughing, Drugs to improve ventilation, Drugs to reduce pulmonary hypertension, Drug delivery doses, Inhalers and Nebulisers.
 8. Neonatal and Pediatric Physiotherapy– Chest physiotherapy for children, the neonatal unit, Modifications of chest physiotherapy for specific neonatal disorders, Emergencies in the neonatal unit.
 9. Physiotherapy in Obstructive lung conditions.
 10. Physiotherapy in Restrictive lung conditions.
 11. Management of breathlessness.
 12. Pulmonary Rehabilitation.
 13. Physiotherapy following Lung surgeries
 14. Respiratory failure– Oxygen Therapy and Mechanical Ventilation.
 15. Introduction to ICU : ICU monitoring – Apparatus, Airways and Tubes used in the ICU - Physiotherapy in the ICU – Common conditions in the ICU – Tetanus, Head Injury, Lung Disease, Pulmonary Oedema, Multiple Organ Failure, Neuromuscular Disease, Smoke Inhalation, Poisoning, Aspiration, Near Drowning, ARDS, Shock; Dealing with an Emergency Situation in the ICU. assessment and management of ICU acquired weakness and anxiety.
 16. Physiotherapy management following cardiac surgeries.
 17. Cardiac Rehabilitation.
 18. Physiotherapy management following PVD.
 19. Abdominal Surgeries- Management of Pulmonary Restorative Dysfunction following surgical procedures on Abdomen and Thorax.
 20. Management of Amputations following Diabetes, PVD- Prosthesis in amputations of lower limbs following ulcers and gangrenes.
 21. Home program and education of family members in patient care.
 22. Treatment, Response to exercise and Implications of Physiotherapy in the following disease conditions: Hypertension, Diabetes, Renal Failure and Obesity.
 23. Applied Yoga in Cardio-respiratory conditions

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PRACTICAL:

Practical shall be conducted for all the relevant topics discussed in theory in the following forms:

1. Bedside case presentations and case discussions
2. Lab sessions consist of evaluation and assessment methods on student models, treatment techniques and practice sessions.

PHYSIOTHERAPY IN GENERAL MEDICINE & GENERAL SURGERY

SUBJECT DESCRIPTION- At the end of the course the candidate will be able to:

1. Identify, discuss and analyze cardiovascular and pulmonary dysfunctions based on pathophysiological principles and arrive at appropriate functional diagnosis.
2. Acquire knowledge of rationals of basic investigative approaches in the medical system and surgical intervention, regimes in general surgeries (special emphasis on abdominal surgeries)
3. Execute effective physio therapeutic measures (with appropriate clinical reasoning) and exercise, conditioning in general medical and surgical conditions.
4. Acquire knowledge of the overview of patient's care in the I.C.U. for bronchial hygiene and continuous monitoring of the patient in I.C.U.
5. Select strategies for cure, care and prevention; adopt restorative and rehabilitative measures for maximum possible functional independence of a patient at home, work and in community.
6. Acquire the knowledge of evaluation and physio therapeutic treatment for obstetric and gynecological conditions
7. Acquire the knowledge of various conditions where physiotherapy plays a vital role in the rehabilitation (psychiatry, dermatology, geriatric and ENT conditions)
8. Evaluate, grade and treat non healing wounds.

THEORY

1. Physiotherapy in mother and child care – ante and post-natal management, early intervention and stimulation therapy in childcare (movement therapy)
2. Applied Yoga in Obstetric and Gynecological conditions
3. Geriatrics– handling of old patients and their problems.
4. Complication common to all operations

SYLLABUS - BACHELOR OF PHYSIOTHERAPY

ATAL BIHARI VAJPAYEE MEDICAL UNIVERSITY, LUCKNOW

95 | Page

5. Abdominal incisions.
6. Physiotherapy in pre and post-operative stages.
7. Operations on upper G.I.T.- oesophagus, stomach, duodenum
8. Operations on large and small intestine–Appendectomy, cholecystectomy, partial colectomy, ileostomy, hernia and herniotomy, herniorrhaphy, hernioplasty.
9. Physiotherapy in dentistry
10. Burns and its treatment– physiotherapy in burns, skin grafts, and reconstructive surgeries.
11. Management of wound ulcers- Care of ulcers and wounds- Care of surgical scars- U.V.R and other electro therapeutics for healing of wounds, prevention of Hyper-granulated Scars Keloids, Electro therapeutics measures for relief of pain during mobilization of scars tissues.
12. Physiotherapy intervention in the management of Medical, Surgical and Radiation Oncology Cases.
13. Physiotherapy in dermatology - Documentation of assessment, treatment and follow up skin conditions. U.V.R therapy in various skin conditions; Vitiligo; Hair loss; Pigmentation; Infected wounds ulcers. Faradic foot bath for Hyperhidrosis. Massage maneuvers for cosmetic purposes of skin; use of specific oil as medium; Care of anesthetic hand and foot; Evaluation, planning and management of leprosy-prescription, fitting and training with prosthetic and orthotic devices.
14. ENT– sinusitis, non-suppurative and chronic suppurative otitis media, osteosclerosis, labyrinthitis, mastoidectomy, chronic rhinitis, laryngectomy, pharyngeal – laryngectomy, facial palsy.
15. Sexual Rehabilitation- Male and female Sexual health issues post disability, Role of physiotherapist in counselling about sexual health of patients with special needs, stroke and Post-ICU discharge patients. Erectile dysfunction and role of Physiotherapy. Principles and techniques of Pilates and allied therapeutics in sexual dysfunction.

PRACTICAL - Practical shall be conducted for all the relevant topics discussed in theory in the following forms:

1. Bedside case presentations and case discussions
2. Lab sessions consist of evaluation and assessment methods on student models, treatment techniques and practice sessions.

PHYSIOTHERAPY IN SPORTS

1. Pre-exercise evaluation
2. Diet and nutrition Measurement of fitness components and sports skills - Measurement of muscular Strength, Measurement of muscular endurance, Measurement of flexibility, Determination of exercise endurance.
3. Physiological effects of exercise on body systems - Muscular system, Endocrine system, Cardio-respiratory system, Nervous system
4. Sports injuries - Spine – PIVD, Kissing spine, cervical whiplash injuries, facet joint syndrome, SI joint dysfunction, Hip – muscle strain, piriformis syndrome, ITB syndrome, osteitis pubis, Knee – menisci, cruciate, collateral, osteochondritis, chondromalacia patellae, biceps femoris tendonitis, swimmers knee, patello-femoral pain syndrome, Leg & ankle – shin splint, achilles tendonitis & rupture, TA bursitis, ankle sprain, plantar fasciitis, turf toe syndrome, Head & face – maxillofacial injuries, helmet compression syndrome.
5. Sports injuries
Shoulder – instability, rotator cuff injury, biceps tendonitis and rupture, pectoralis major rupture, scapular dyskinesis and acromio-clavicular joint injuries, Elbow – tennis elbow, golfer's elbow, Wrist and hand – carpal tunnel syndrome, gamekeeper's thumb.
6. Principles of injury prevention.
7. Principles of training & Rehabilitation in sports injuries.
8. Sports in Special age groups: Female athlete triad, Younger athlete- Musculoskeletal problems, management, children with chronic illness and nutrition. Older Athlete- Physiological changes with aging, benefits, risks of exercise in elderly, exercise prescription guidelines for elderly.
9. Fitness: Key concepts of fitness
 - a. Defining & Measuring Fitness
 - b. Assessment of Stress with a Survey.
 - c. Visualizing Fitness
 - d. Screening for Mental and Physical Fitness
 - e. Body Mass Index calculations.
10. Fitness training
 - Physical Activities Readiness Questionnaire
 - Physical activities pyramid
 - Exercise programs and evidence – based practice
11. Health, fitness, and wellness issues during childhood and adolescence
12. Health, fitness, and wellness during adulthood
13. Women's health issues: focus on pregnancy
14. Prevention practice for older adults

SYLLABUS - BACHELOR OF PHYSIOTHERAPY

15. Resources to optimize health and wellness
16. Health protection.
17. Sports Massage and Dry needling in Athletes.

PRACTICAL

1. Practical demonstration of basic principles of physiotherapy assessment, functional Assessment and application of sports physiotherapy
2. Students must maintain a logbook. The duly completed logbook should be submitted during practical examination.

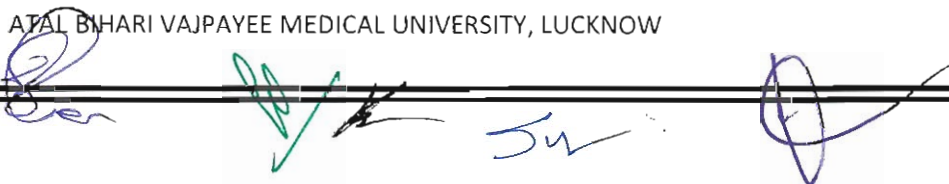
COMMUNITY PHYSIOTHERAPY

SUBJECT DESCRIPTION- The objective of the course is that after the specified hours of lectures and demonstrations the student will be able to identify rehabilitation methods to prevent disabilities and dysfunctions due to various disease

Health scenario of India - past, present and future. Demography & Vital Statistics- Demography – its concept, Vital events of life & its impact on demography, Significance and recording of vital statistics, Census & its impact on health policy,

Epidemiology: Principles of Epidemiology, Natural History of disease, Methods of Epidemiological studies, Epidemiology of communicable & non-communicable diseases, disease transmission, host defense immunizing agents, cold chain, immunization, disease monitoring and surveillance.

1. Rehabilitation: Definition, Types, Rehabilitation Team.
2. Introduction to Community Based Rehabilitation: Definition, Historical review, Concept of CBR, Need for CBR, Difference between Institution based and Community based Rehabilitation, Objectives of CBR, Scope of CBR, Role of each member of CBR team, Models of CBR.
3. W.H.O. 's policies-about rural health care-concept of primary / tertiary health centers-district hospitals etc-Role of P.T. -
4. Disability: Definition of Impairment, Handicap and Disability, Disability Process, Difference between impairment, handicap and disability, Causes of disability, Types of disability, Prevention of



disability, Disability Evaluation.

5. Role of voluntary Organizations in CBR: Charitable Organizations, Voluntary health agencies- National level and International NGO's, Multilateral and Bilateral agencies. International Health Organizations: WHO, UNICEF, UNDP, UNFPA, FAO, ILO, World bank, USAID, SIDA, DANIDA, Rockefeller, Ford foundation, CARE, REDCROSS.
6. National District Level Rehabilitation Programme: Primary rehabilitation unit, Regional training center, District rehabilitation center, Primary Health center, Village rehabilitation worker, Anganwadi worker
7. Modifications in physical and architectural barriers for disabled, Disability prevention, Strategies to improve ADL.
8. Extension services and mobile units: Introduction, Need, Camp approach.
9. Geriatrics - Role of Physiotherapy in Hospital based care, Half-way homes, Residential homes, Meals on wheels etc. Home for the aged, Institution based Geriatric Rehabilitation. Few conditions: - Alzheimer's disease, Dementia, Parkinson's disease, Incontinence, Iatrogenic drug reactions, etc. Ethics of Geriatric Rehabilitation.
10. Industrial Health & Ergonomics-Occupational Hazards in the industrial area overuse/fatigue injuries, ergonomic evaluation of work place- mechanical stresses per hierarchy-
11. Health and Disease: Definitions, Concepts, Dimensions and Indicators of Health, Concept of well-being.
12. Mental Health: Characteristics of a mentally healthy person, Types of mental illness, Prevention and Management through Physiotherapy
13. Physiotherapy in Obstetrics, Paediatrics and Geriatrics:, Antenatal, Intranatal and post natal care, Care of children,
14. Occupational Health: Prevention of occupational diseases. Prevention practice: a holistic perspective for physiotherapy. Physiotherapist role for a healthy community
15. Marketing health and wellness.
16. Role of family on individual's health, effects of sickness and disability on other members of family.
17. Social factors in disease and health, Social Problems of disabled and role of social worker.
18. Introduction to Bio-Engineering; Classification of Orthoses and

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prostheses; Introduction to surgical anatomy and various pathological deviations with respect to brace fitting, Biomechanical principles of orthotic and prosthetic application, Rationale of prescribing Prosthetic and Orthotic devices, Types of Prosthetic and Orthotic devices: Spinal, Lower limb, and Upper limb, checkout, usage advice, precautions, and follow-up. Walking aids and wheel chairs: prescription, usage advice, and follow-up.

19. Psychological aspects of orthotic and prosthetic application
20. Occupational Therapy

PRACTICAL: This will consist of Field visits to urban and rural PHC's, Visits to regional rehabilitation training center, Regular mobile camps, Disability surveys in villages, Disability screening, Demonstration of Evaluation and Physiotherapy prescription techniques for musculoskeletal, neuromuscular, cardio-respiratory, paediatric, gynecological and geriatric problems in community, Demonstration of evaluation and prescription techniques for ambulatory and assistive devices, Fabrication of low cost assistive devices with locally available materials.

1. Demonstration of methods of using orthotics & prosthetics devices.
2. Methods of organization of community based rehabilitation centres.
3. Visit of different rehabilitation centres and preparing a report of the visit & viva voce of the aforesaid report.
4. Fabrication & Designing of upper extremity, lower extremity and spinal orthosis, indications and check out;
5. Fabrication & Designing of upper extremity and lower extremity prostheses, indications and check out; prescription and designing of footwear and modifications;
6. Fabrication & Designing and construction of adaptive devices.

INTRODUCTION TO QUALITY AND PATIENT SAFETY

1. Quality assurance and management- The objective of the course is to help students understand the basic concepts of quality in health Care and develop skills to implement sustainable quality assurance program in the health system. Concepts of Quality of Care Quality

SYLLABUS - BACHELOR OF PHYSIOTHERAPY

Improvement Approaches , Standards and Norms, Quality Improvement Tools, Introduction to NABH guidelines.

2. Basics of emergency care and life support skills- Basic life support (BLS) Fundamental aspects of BLS, immediate recognition of sudden cardiac arrest (SCA) and activation of the emergency response system, early cardio pulmonary resuscitation (CPR), and rapid defibrillation with an automated external defibrillator (AED). Initial recognition and response to heart attack and stroke are also considered part of BLS. The student is also expected to learn about basic emergency care including first aid and triage. Topics to be covered under the subject are as follows:

- a. Vital signs and primary assessment
- b. Basic emergency care – first aid and triage
- c. Ventilations including use of bag-valve-masks (BVMs)
- d. Choking, rescue breathing methods
- e. One- and Two-rescuer CPR
- f. Using an AED (Automated external defibrillator).
- g. Managing an emergency including moving a patient

At the end of this topic, focus should be to teach the students to perform the maneuvers in the simulation lab and to test their skills with focus on airways management and chest compressions. At the end of the foundation course, each student should be able to perform and execute/operate on the above mentioned modalities.

3. Biomedical waste management and environment safety- The aim of this section will be to help prevent harm to workers, property, the environment and the general public. Topics to be covered under the subject are as follows:

- a. Definition of BiomedicalWaste
- b. Waste minimization
- c. BMW – Segregation, collection, transportation, treatment and disposal (including color coding)
- d. Liquid BMW, Radioactive waste, Metals/Chemicals/Drug waste
- e. BMW Management & methods of disinfection
- f. Modern technology for handling BMW
- g. Use of Personal protective equipment (PPE)
- h. Monitoring & controlling of cross infection (Protective devices)

4. Infection prevention and control - The objective of this section will be to provide a broad understanding of the core subject areas of infection

prevention and control and to equip AHPs with the fundamental skills required to reduce the incidence of hospital acquired infections and improve health outcomes. Concepts taught should include–

- a. Evidence-based infection control principles and practices [such as sterilization, disinfection, effective hand hygiene and use of Personal protective equipment (PPE)],
 - b. Prevention & control of common healthcare associated infections,
 - c. Components of an effective infection control program, and
 - d. Guidelines (NABH and JCI) for Hospital Infection Control
5. Disaster preparedness and management- The objective of this section will be to provide knowledge on the principles of on-site disaster management. Concepts to be taught should include-
- a. Fundamentals of emergency management,
 - b. Psychological impact management,
 - c. Resource management,
 - d. Preparedness and risk reduction,

Key response functions (including public health, logistics and governance, recovery, rehabilitation and reconstruction), information management, incident command and institutional mechanisms.

EVALUATION METHODS AND OUTCOME MEASURES

Implement methods to assess individual and collective outcomes of patients/clients with disorders of the musculoskeletal, neuromuscular, cardiovascular, pulmonary and integumentary systems using valid and reliable measures that take into account the setting in which patients/clients receive services, the variables of cultural competence, and the effect of societal factors.

CLINICAL REASONING AND EVIDENCE BASED PHYSIOTHERAPY PRACTICE-

1. Introduction to Evidence Based Practice: Definitions, Evidence Based

Practice

2. Concepts of Evidence based Physiotherapy: Awareness, Consultation, Judgement, and Creativity
6. Development of Evidence based knowledge, The Individual Professional, Professionals with in a discipline, and Professionals across disciplines
4. Evidence Based Practitioner: The Reflective Practitioner, The E Model, Using the E Model
5. Finding the Evidence: Measuring outcomes in Evidence Based Practice, Measuring Health Outcomes, Measuring clinical outcomes, Inferential statistics and Causation
6. Searching for the Evidence: Asking Questions, Identifying different sources of evidence, Electronic Bibliographic databases and World Wide Web, Conducting a literature search. Step by-step search for evidence
7. Assessing the Evidence: Evaluating the evidence; Levels of evidence in research using quantitative methods, Levels of evidence classification system, Outcome Measurement, Biostatistics, The critical review of research using qualitative methods.
8. Systematically reviewing the evidence: Stages of systematic reviews, Meta-analysis, The Cochrane collaboration
9. Economic evaluation of the evidence: Types of economic evaluation, conducting economic evaluation, critically reviewing economic evaluation, locating economic evaluation in the literature.
10. Using the evidence: Building evidence in practice; Critically Appraised Topics (CATs), CAT format, Using CATs, Drawbacks of CATs
11. Practice guidelines, algorithms, and clinical pathways: Recent trends in health care, Clinical Practice Guidelines (CPG), Algorithms, Clinical pathways, Legal implications in clinical pathways and CPG, Comparison of CPGs, Algorithms and Clinical Pathways
12. Communicating evidence to clients, managers and funders: Effectively communicating evidence, Evidence based communication in the face of uncertainty; Evidence based communication opportunities in everyday practice. Research dissemination and transfer of knowledge: Models of research transfer, Concrete research transfer strategies, Evidence based policy

CRITIQUE ENQUIRY, CASE PRESENTATION AND CASE DISCUSSION

SYLLABUS - BACHELOR OF PHYSIOTHERAPY

ATAL BIHARI VAJPAYEE MEDICAL UNIVERSITY, LUCKNOW

103 | Page



COMMUNICATION & SOFT SKILL DEVELOPMENT

Major topics to be covered under Communication course–

Basic composition

Report writing: What is a report? Kinds and objectives of reports, writing reports. Business Letter writing: Introduction to business letters, types of business letters, Layout of business letters, Letter of Enquiry / Complaint

Interview skills

- a) Personal Introduction
- b) Developing skill to Debate, Discussion, Basics of GD & styles of GD
- c) Discussion in groups and group discussion on current issues. d) Body language e) Non-verbal cues & soft skills. f) Steps to prepare for an interview and mock interviews

Professional skills

- a) Email and report writing b) Joining letter, cover letter & resignation letter c) Inter- office memo, formal business letter, informal notes d) Minutes of meeting, reporting events, summary writing

Basic concepts & principles of good communication

- a) Special characteristics of health communication
- b) Therapeutic communication: empathy versus sympathy
- c) Communication methods for teaching and learning.
- d) Communication methods for patient education.
- e) Barriers of communication & how to overcome

PRACTICALS

1. How to overcome communication barriers.
2. Practice in Language Lab.

RESEARCH PROJECT- The student need to submit a minimum of two case studies based on Evidence based physiotherapy evaluated during the clinical training hours and submit the same to the department at the end of fourth year before final examination. The student shall not be allowed to

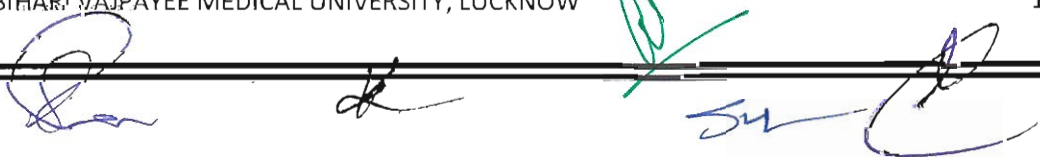
SYLLABUS - BACHELOR OF PHYSIOTHERAPY

appear for the final examination without submission of research project.

CLINICAL EDUCATION

Students will be posted in rotation in the following areas/wards. The students will be clinically trained to provide physiotherapy care for the patients under supervision. They will be trained on bed side approach, patient assessment, performing special tests, identifying indications for treatment, ruling out contraindications, decision on treatment parameters, dosage and use relevant outcome measures under supervision. Evidence based practice will be part of training.

1. Physiotherapy OPD
2. Neurology, Neurosurgery & Neuro ICU
3. Community-PHC
4. Orthopedics
5. General Medicine & MICU
6. General Surgery & CTS ICU



INTERNSHIP

The internship time period provides the students the opportunity to continue to develop confidence and increased skill in simulation and treatment delivery. Students will demonstrate competence in beginning, intermediate, and advanced procedures in both areas. Students will participate in advanced and specialized treatment procedures. The student will complete the clinical training by practicing all the skills learned in classroom and clinical instruction. The students are expected to work for a minimum 8 hours per day.

1. Initial Assessment Documentation: Clinical staff must document the following information:

- a. Initial assessment documented based on SOAP format.
- b. Subjective examination (symptomatic)
- c. Objective examination (measureable, observable)
- d. Action/Analysis (interpretation of current condition/intervention provided)
- e. Plan of action
- f. Written or verbal feedback to the client or other relevant carers
- g. Discharge plan documented
- h. Agreement to treatment plan by patient or “person responsible”

2. Progress Documentation: Progress documentation may include the following information:

- a. Any individual intervention should be documented in SOAP format (including response to intervention/s using outcome measures)
- b. Oral consent obtained and documented when there is a significant change in treatment/treatment options/status of patient's health.
- c. Written consent obtained for designated invasive procedures
- d. Change in status or events that may affect discharge plans/goals
- e. Documented consultation with key clinical team members
- f. Skills based outcomes and monitor able indicators for bachelors of physiotherapy

Bachelor of Physiotherapy

Competency Statements

SYLLABUS - BACHELOR OF PHYSIOTHERAPY

ATAL BIHARI VAJPAYEE MEDICAL UNIVERSITY, LUCKNOW

106 | Page

1. Consults with the client to obtain information about his/her health, associated history, previous health interventions, and associated outcomes.
2. Collects assessment data relevant to the client's needs and physiotherapy practice.
3. Be able to conduct the patient evaluation and assessment as per condition.
4. Analyzing Assessment findings & Establish a physiotherapy diagnosis and prognosis.
5. Develops and Recommends an intervention strategy.
6. Be able to prepare the patient (physically and emotionally) and as well as the equipment to be used as per treatment plan
7. Implements intervention.
8. Be able to accurately explain the treatment plans and able to demonstrate and teach self exercises
9. Advise patient on appropriate nutrition, exercises, rest, relaxation other issues
10. Evaluates the effectiveness of interventions.
11. Be able to complete accurate treatment documentation.
12. Develops, builds, and maintains rapport, trust, and ethical professional relationships through effective communication.
13. Establishes and maintains inter professional relationships, which foster effective client-centered collaboration.
14. Understand the principles of continuous quality improvement.
15. Be able to carry out the daily/weekly Quality Control (QC) checks.
16. Be able to review the literature.
17. Be able to suggest implementation of research findings.
18. Be able to suggest / initiate topics for physiotherapy research
19. Be able to Interpret, apply and disseminate information as a member of the physiotherapy team.

List of Recommended Books for BPT Course (60 seats)

Human Anatomy			
S.N.	Title	Author	No. of copy
1	Textbook of Anatomy Upper Limb & Thorax Vol-1st	Singh, Vishram	21
2	Textbook of Anatomy Abdomen & Lower Limb Vol-2	Singh, Vishram	21
3	Human Anatomy : Lower Limb and Abdomen Vol.2	Chaurasia, B.D.	15
4	Human Anatomy : Head, Neck and Brain Vol.3	Chaurasia, B.D.	15
5	Textbook of Anatomy Head Neck & Brain Vol 3	Singh, Vishram	15
6	Cunningham's Manual of Practical Anatomy Thorax & Abdomen vol 2	Romanes, G.J.	15
7	Hand Book of General Anatomy	Chaurasia, B.D.	14
8	Cunnighams Manual of Practical Anatomy vol 1	Romanes, G.J.	14
9	Cunningham's Manual of Practical Anatomy Head & Neck vol 3	Romanes, G.J.	14
10	Textbook of Anatomy with Colour Atlas Vol.1	Singh, Inderbir	11

SYLLABUS - BACHELOR OF PHYSIOTHERAPY

ATUL BIHARI VAJPAYEE MEDICAL UNIVERSITY, LUCKNOW

108 | Page

11	Text Book of Anatomy with Colour Atlas Vol.2	Singh, Inderbir	11
12	Text Book of Anatomy with Colour Atlas Vol.3	Singh, Inderbir	11
13	General Anatomy	Pal G.P	10
14	Human Anatomy: Regional & Applied - Vol 1	Chaurasia's, B.D.	10
15	Text Book of Human Neuroanatomy	Singh, Inderbir	10
16	McMinn's Color Atlas of Human Anatomy	Abrahams, P.H.	9
17	Clinical Anatomy	Snell, Richards	9
18	Gray's Anatomy for Students	Drake, Richard L.	9
19	Grant's Atlas of Anatomy	Agur, Anne M.R.	8
20	Anatomy and physiology for Physiotherapists	Singh, Inderbir	6
21	Clinical Neuroanatomy for Medical Students	Snell, Richards	6
22	Last's Anatomy : Regional and Applied	Sinnatamby, C.S.	5
23	Human Anatomy : Upper Limb and Thorax Vol.1	Chaurasia, B.D.	5
24	Textbook of Clinical Neuroanatomy	Singh, Vishram	5
25	Text Book of Human Histology	Singh, Inderbir	4

SYLLABUS - BACHELOR OF PHYSIOTHERAPY

ATAL BIHARI VAIPAYEE MEDICAL UNIVERSITY, LUCKNOW

109 | Page

[Handwritten signatures and initials in blue and green ink]

26	Text Book of Human Osteology	Singh, Inderbir	4
27	Essetials of Human Anatomy Vol-1	Datta, A.K	4
28	Essentials of Human Anatomy Head & Neck	Datta, A.K	4
29	Cunnighams Manual of Practical Anatomy	Romanes, G.J.	4
30	Gross Anatomy Workbook	Gandotra,A	4
31	Atlas of Histology	Eroschenko, V.P.	1
32	Human Anatomy Regional Applied	Chaurasia's, B.D.	1
33	Human Embroyology	Singh, Inderbir	1
34	Inderbir Singh' Text Book of Anatomy Upper Limb Thorax Vol 1	Devi, V. Subhadra	1
35	Inderbir Singh' Text Book of Anatomy Lower Limb Abdomen and Pelvis Vol 2	Devi, V. Subhadra	1
36	Inderbir Singh' Text Book of Anatomy Head and Neck Neuroanatomy Vol 3	Devi, V. Subhadra	1
37	Taxt Book of Human Anatomy	Tanton, B.K.	1
38	Principles of Anatomy & Physiology	Tortora, G.J.	1
Human Physiology			
S.N.	Title	Author	No. of copy

SYLLABUS - BACHELOR OF PHYSIOTHERAPY

ATUL BIHARI VAJPAYEE MEDICAL UNIVERSITY, LUCKNOW

110 | Page

1	Comprehensive Textbook of Medical Physiology Vol-1	Pal G.P	15
2	Comprehensive Textbook of Medical Physiology Vol-2	Pal,G.K	15
3	Text book of Physiology Vol-1	Jain, A.K.	15
4	Text book of Physiology Vol 02	Jain, A.K.	15
5	Basic of Medical Physiology	Venkatesh,D	15
6	Essentials of Medical Physiology	Sembulingam, K	15
7	Human Physiology and Biochemistry for Physical Therapy & Occupational Therapy	Jain, A.K.	10
8	Workbook of Practical Physiology	AITBS	10
9	Review of Medical Physiology	Ganong, William.F	3
10	Text Book of Physiology	Ahuja, Veena	1
11	A Text Book of Practical Physiology	Ghai, C.L.	6
12	Medical Physiology	Marya, R.K.	4
13	MCQ In Human Physiology	Tandon O.P.	1
14	Understanding Medical Physiology	Bijlani,R.L.	1
15	Handbook of Human Physiology	Ratan, Vidya	1
16	Manual of Practical Physiology	Jain, A.K.	1

17	Human Anatomy and Physiology	Jain, A.K.	1
18	Practical Physiology (in Hindi)	Suraj Kuamr	5
19	Viva in Human Physiology	Ratan, Vidya	1

Biochemistry			
S.N.	Title	Author	No. of copy
1	Biochemistry	Satyanarayana, U.	24
2	Biochemistry For Physiotherapy And Allied Health Sciences Students	Shetty, B.V	11
3	Introductory Practical Biochemistry	Sawhney, S. K.	9
4	Harper's Illustrated Biochemistry	Murray, Robertk	5
5	Text Book of Biochemistry for Medical Students	Vasudevan, DM	5
6	Outline of Biochemistry	Conn, Eric E.	4
7	A Dictionary of Biochemistry	Sharma, J.L.	4
8	Biochemistry for Students	Malhotra, V.K.	4
9	Fundamentals of Biochemistry	Deb, A.C.	4
10	Text Book of Medical Biochemistry	Chatterje, M.N.	4
11	Text Book of Biochemistry for Paramedical Students	Ramamoorthy, P	1

12	Medical Biochemistry for Physiotherapy Students	Kaur, Harpreet	1
13	Concise Textbook of Biochemistry	Rajagopal, G	1
14	Concepts of Biochemistry for Physiotherapy and Pharmacy	Singh, S.P.	1

Biophysics

1	Integrated Molecular and Cellular Biophysics	Valerica Raicu	1
2	Synopsis of Bio-Physics and Medical Electronics	Teotia, Seema	10
3	Biophysics	Pattabhi, Vasantha	10
4	Physical Biology of the Cell	Rob Phillips	1
5	Intermediate Physics for Medicine & Biology	Russell K Hobbie	1

Psychology

S.N.	Title	Author	No. of copy
1	Introduction to Psychology	Morgan, Clifford T	10
2	Shorter Oxford Text Book of Psychiatry	Gelder, Michael	10
3	Modern Clinical Psychology	Korchin, S.J	9
4	Sociology For Physiotherapists	Khanna, Purnima	5
5	Introduction to Psychology	Smith, Edward, E.	4

SYLLABUS - BACHELOR OF PHYSIOTHERAPY

ATAL BIHARI VAJPAEYEE MEDICAL UNIVERSITY, LUCKNOW

113 | Page

6	Experimentals Physiology	Woodworth,R.S.	4
7	Social Psychology	Macdavid,John W.	4
8	An Introduction to Sociology	Sachdeva, D.R.	4
9	Psychology for Physiotherapists	Ramalingam, A T	2
10	Psychology	Baron,Robert A	1
11	Social Physiology	Baron,Robert A	1
12	Introduction to Psychology	Fernald, LD	1
13	Sociology For Physiotherapists	Bid	1
14	Principles of Sociology	Das, G.	1
15	A Text Book of Sociology for Physiotherapy	Kumari, Neelam	1
Yoga			
1	Yoga and Rehabilitation	Nilima Patel	10
2	Yoga for Health and Wellbeing	BKS Iyengar	10
3	The Heartfulness Way	Kamlesh D Patel	10
4	Principles of Exercise in Physiotherapy	Sivaram,C	10
First Aid			

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ATAL BIHARI VAJPAYEE MEDICAL UNIVERSITY, LUCKNOW

114 | Page

S.N.	Title	Author	No. of copy
1	First Aid for Nursing	Indrani,T,K	12
2	First AID and Emergency Care	Harris, N	10
3	Fundamentals of Nursing	Sethi, Dipak	10
4	Manual of First Aid	Gupta,L.C	2

Computers

S.N.	Title	Author	No. of copy
1	Computer Fundamentals	Sinha, P.K.	9
2	Environmental Science	Agarwal K.C	5
3	Hazardous waste incineration	Brunner R.C	1
4	Marine Pollution	Clark R.S	1
5	Environmental encyclopedia	Cunningham W.P	1
6	Environmental chemistry	Cooper, T.H. Gorhani, E&Hepworth,	1

General Books

S.N.	Title	Author	No. of copy
1	Abhinav's Dictionary of Physiotherapy	Sharma, Ashwani.	9
2	Dictionary of Physiotherapy	Gupta, Abhishek	4
3	Introduction to Physiotherapy	Suraj Kumar	4
4	Illustrated Oxford Dictionary	D.K	1

Pathology

S.N.	Title	Author	No. of copy
1	A Text Book of Pathology	Harsh Mohan	30
2	Basic Pathology	Kumar, Vinay	5
3	Robin's and cotran pathologic basis of disease	Kumar, Vinay	4
4	Essential of Pathology	Chaun, H.V.S.	4
5	General and Systematic Pathology	Underwood, J.C.E	1
6	Pathophysiology	Marya, R.K.	1
7	Text Book of Pathology for Allied Health Sciences	Nayak, Ramdas	1
8	T.B. of Medical Laboratory Technology	Godkar .P.B	1

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ATUL BIHARI VAJPAYEE MEDICAL UNIVERSITY, LUCKNOW

116 | Page

Microbiology

S.N.	Title	Author	No. of copy
1	Text Book of Microbiology	Panikar, C.K.	19
2	Essential of Microbiology	Chaun, H.V.S.	4
3	Text Book of Microbiology for Physiotherapy	Beveja, C.P	1
4	Jawetz,Melnich,& Adelbergs Medical Microbiology	Brooks, G.F	1
5	Essentials of Medical Microbiology	Sastry, A S	1

Pharmacology

S.N.	Title	Author	No. of copy
1	Essentials of Medical Pharmacology	Tripathi, K.D.	21
2	A Concise T.B. of Pharmacology	Murugesh, N.	9
3	Text book of Pharmacology for Physiotherapy	Uday Kumar	7
4	Pharmacology & Pharmacotherapeutics	Satoskar, R.S.	4
6	Pharmacology for Physiotherapists	Ramesh,K.V	2
7	Multiple choice question in Pharmacology	Tripathi, K.D.	2
8	Goodman & Gilman's the Pharmacological basis of	Brunton,L.L	1

SYLLABUS - BACHELOR OF PHYSIOTHERAPY

ATAL BIHARI VAJPAYEE MEDICAL UNIVERSITY, LUCKNOW

117 | Page



	Therapeutics		
9	Textbook of Pharmacology for Dental and Allied Health Sciences	Udaykumar,Padmaja	1
10	Pharmacology for Physiotherapist	Sharma, J.L.	1

Exercise Therapy

S.N.	Title	Author	No. of copy
1	The Principles of Exercise Therapy	Gardiner,M.D	25
2	Principles of Exercise in Physiotherapy	Sivaram,C	25
3	Exercise Therapy	Suraj Kumar	20
4	Therapeutic Exercise	Kisner, Carolyn	14
5	Muscles Testing and Function	Kendall, F.P	14
6	Practical exercise therapy	Hollis,Margaret	14
7	Principles and practice of Therapeutic Massage	Sinha, A.G	14
8	Text book of Therapeutic exercise	Narayan,Laxmi,S	14
9	Concise Exercise Therapy	Meena, Roshan	10
10	Massage For Therapists	Hollis, Margaret	9
11	Daniels and Worthingtons Muscle Testing	Hislop, Helen.J	6

12	Yogic exercise physiologic & psychic processes	Dutta,Ray	3
13	Exercise Therapy	Gormley John	1
14	Basic Clinical Massage Therapy	Clay, JH	1

Electrotherapy

S.N.	Title	Author	No. of copy
1	Text book of Electrotherapy	Jagmohan Singh	21
2	Essentials of Electrotherapy	Chippala, Purusotham	15
3	Hand book of Practical Electrotherapy	Mitra, Pushpal ,K	15
4	Clayton's Electrotherapy theory and practice	Forster,A	11
5	Electrotherapy	Kitchen,Sheila	11
6	Electrotherapy Explained	Robertson Val	10
7	Essentials of Electrotherapy	Chippala, Purusotham	10
8	Electrotherapy in Rehabilitation	Gersh,M.R	3
9	Fundamentals of Electrotherapy	Nath,Uday	2
10	Therapeutic Modalities	Starkey, Chad	1
11	Basic of Electrotherapy	Khatri, Subhash	1

12	Electrotherapy Simplified	Nanda, Basanta Kumar	1
13	Basic Electronics & Linear Circuits	Bhargava N.N	1

Biomechanics

S.N.	Title	Author	No. of copy
1	Joint Structure and Function	Norkin, Cynthia	28
2	Brunstrom's Clinical Kinesiology	Smith, Laura K.	9
3	Biomechanics the Nucleus of Physiotherapy	Raj Kumar,R.V	6
4	Textbook of Biomechanics	Koley,S	6
5	Textbook of Kinanthropometry	Koley,S	3
6	Text Book of Kinesiology	Bindal, VD	1
7	Manual of Kinesiological Taping	Jain Piyush	1
8	Principles of Mechanics & Biomechanics	Bell, Frank	1
9	Biomechanics of Human Movement	Adrian, MJ	1
10	Basic Biomechanics	Hall,S.J	1

Orthopaedics

S.N.	Title	Author	No. of copy
1	Essential Orthopaedics	Maheshwari. J.	25

SYLLABUS - BACHELOR OF PHYSIOTHERAPY

ATAL BIHARI VAJPAYEE MEDICAL UNIVERSITY, LUCKNOW

120 | Page

2	Apley's System of Orthopaedics and Fractures	Solomaon, Louis	20
3	Out line of Orthopaedics	Adams J.C	20
4	Essentials of Orthopaedics for Physiotherapists	Ebnezar, John	10
5	Textbook of Orthopaedics & Traumatology	Natarajan, Mayil Vahanan	10
6	Handbook of Orthopaedics	Panda, UN	5
7	Clinical Orthopedic Examination	McRae, Ronald	4
8	Step by Step Injection techniques in orthopaedics	Ebnezar, John	3
9	Text book of Orthopaedics	Kotwal, Orakash	10

Neurology

S.N.	Title	Author	No. of copy
1	Neurology and Neurosurgery Illustrated	Lindsay, Kenneth	25
2	Brain & Bannister's Clinical Neurology	Bannister, S.R	10
3	Barr's The Human Nervous System	Kiernan, J.A.	1

Medicine

S.N.	Title	Author	No. of copy
1	Davidson's Principles and Practice of Medicine	Boon, Nicholas A	15

SYLLABUS - BACHELOR OF PHYSIOTHERAPY

ATAL BIHARI VAJPAYEE MEDICAL UNIVERSITY, LUCKNOW

121 | Page

2	Essential Pediatrics	Ghai, O.P	9
3	Hutchison's Clinical Methods	Swash, Michael L.	9
4	Medicine for Student	Golawala, Aspi F.	4
5	Hand book of Ophthalmology	Chatterjee, B.M	2
6	Textbook of Medicine Vol-1	Das, Krishna	1
7	Textbook of Medicine Vol-2	Das, Krishna	1
8	Clinical Problems in General Medicine & Surgery	Devitt, Peter	1
9	Signs and Syndromes in Dermatology	Inamadar, Arun	1
10	Ophthalmology	Padmini, H.R	1
11	Text Book of Community Medicine with Recent Advances	Das, B.C	1

Surgery

S.N.	Title	Author	No. of copy
1	A Concise Text book of Surgery	Das S	10
2	Howkin and Bourne Shaw's T.B. Of Gynaecology	Padubidri, V.G	9
3	Bailey & Love's Short Practice of Surgery	Russell, RCG	4

Research and Biostatistics

SYLLABUS - BACHELOR OF PHYSIOTHERAPY

ATAL BHARI VAJPAYEE MEDICAL UNIVERSITY, LUCKNOW

122 | Page

[Handwritten signatures and marks in blue and green ink at the bottom of the page]

S.N.	Title	Author	No. of copy
1	Research Methodology Methods and Techniques	Kothari, C.R.	10
2	Ethical Issues : Perspectives for the Physiotherapists	Raja, Kavitha	10
3	Synopsis of Biostatistics	Singh, Sunita	9
4	Methods in Biostatistics	Mahajan, B.K.	4
5	Research Methodology and Bio-Statistics	Bais, Vinod Kumar	1
6	Clinical Research made Easy	Bhandri, Mohit	1

Ortho Physiotherapy

S.N.	Title	Author	No. of copy
1	Cash's text book of orthopaedics and rheumatology for physiotherapists	Tidswell, Marian	10
2	Clinical Orthopaedic Rehabilitation	Brotzman, S. Brent	10
3	Essentials of Orthopaedics and applied Physiotherapy	Joshi, Jayant	10
4	Tidy's physiotherapy	Porter, Stuart	9
5	Orthopedic physical assessment	Magee, D.J	5
6	The low back pain hand book	Cole, Herring	3

SYLLABUS - BACHELOR OF PHYSIOTHERAPY

ATAL BIHARI VAJPAYEE MEDICAL UNIVERSITY, LUCKNOW

123 | Page

7	Physical Rehabilitation	O,Sullivan, Susan	2
8	Knee pain and disability	Cailliet,Rene	2
9	Hand pain and impairment	Cailliet,Rene	2
10	Foot and ankle pain	Cailliet,Rene	2
11	Low back pain syndrome	Cailliet,Rene	2
12	Neck and arm pain	Cailliet,Rene	2
13	Shoulder pain	Cailliet,Rene	2
14	Ankylosing Spondylitis	Moll, JMH	1
15	Soft tissue pain and disability	Cailliet,Rene	1
16	Manipulative Physiotherapy Assessment Treatment and Improvisation	Biswas, Amrit	1

Sport Physiotherapy

S.N.	Title	Author	No. of copy
1	Clinical sports medicine	Khan,Karim	10
2	Taping Technique Theory and Practice	Ram,C.S	10
3	Sport Medicine Problems & Practical Management	Sherry, E.	5
4	Exercise Physiology	Mcardle W.D	1

SYLLABUS - BACHELOR OF PHYSIOTHERAPY

ATAL BIHARI VAJPAYEE MEDICAL UNIVERSITY, LUCKNOW

124 | Page

Chest Physiotherapy

S.N.	Title	Author	No. of copy
1	Cash's text book of chest,heart and vascular disorders,for physiotherapists	Downie,P.A	20
2	Cardiorespiratory Physiotherapy Adults	Main,E	15
3	Physiotherapy for respiratory and cardiac problems	Pryor, J.A	5
4	Cardiovascular/Respiratory Physiotherapy	Smith,Mandy	3
5	Pediatric & Neonatal mechanical ventilation	Khilani, Praveen	3
6	Chest X Ray Made Easy	Corne,Jonathan	1
7	Fundamentals of Chest Radiology	Ketai L.H	1
8	Manual of ICU Procedures	Gurjar, Mohan	1

Neuro Physiotherapy

S.N.	Title	Author	No. of copy
1	Text book of Neuro Physiotherapy	Jain, Shalu	21
2	Neurological Rehabilitation	Carr, J	12
3	Cash's text book of Neurology for physiotherapists	Downie,P.A	12

4	Right in the middle selective trunk	Davies,P.M	9
5	Step to Follow the Comprehensive Treatment of Patient with Hemiplegia	Davies,P.M	9
6	Starting again	Davies,P.M	3
7	Rehabilitation of movement	Pitt-Brooke	1
8	Physiotherapy in Neuro-Conditions	Raj,G.S	1
9	Neurological physiotherapy	Edwards,Susan	1
10	Physiotherapy in Neurological conditions	Potturi.G.S	1

Physiotherapy in Medical & Surgical Conditions

1	Cash's text book of general medical and surgical conditions for physiotherapists	Downie,P.A	10
2	Physiotherapy in Medical Condition	Suraj Kumar	10
3	Physiotherapy in obstetrics and gynaecology	Polden,M	10

Community Physiotherapy and Rehabilitation

S.N.	Title	Author	No. of copy
1	Park's Text book of Preventive and Social Medicine	Park.K	15
2	Community based Rehabilitation of Persons with Disabilities	Pruthvish, S.	14

SYLLABUS - BACHELOR OF PHYSIOTHERAPY

3	Text book of Rehabilitation	Sunder, S	10
4	Physical Rehabilitation	O,Sullivan, Susan	6
5	Orthotics A comprehensive clinical approach	Edelstein J.E	4
6	Hand Splinting	Wilton, Judith	3
7	Physiotherapy in Community Health and Rehabilitation	Naqvi, Waqar	1

Objective Book for preparation of JOB and MPT

1	Multiple Choice Questions For Physiotherapist, Jaypee Brothers Medical Publishers Pvt. Ltd	Suraj Kumar	10
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List of Physiotherapy Equipments required for commencement of BPT (60 students)

S.No.	Name of Equipment	Quantity
1.	Continuous passive motion	01
2.	Interferential therapy with four electrodes	03
3.	Ultra Sound therapy	03
4.	Short wave & Long wavediathermy	01
5.	Infra Red Lamp	01
6.	Hydro – collator with packs	01
7.	Paraffin wax bath	01
8.	Vacuum therapy	01
9.	Microwave diathermy	01
10.	TENS	02
11.	Lumbar-Cervical traction table	02
12.	Wooden Examination Tables	10
13.	Wooden Movable Racks	10
14.	Diagnostic Muscle-Nerve stimulator with electrodes	05
15.	Push Pull Dynamometer	01

SYLLABUS - BACHELOR OF PHYSIOTHERAPY

ATAL BIHARI VAJPAYEE MEDICAL UNIVERSITY, LUCKNOW

127 | Page

16.	Cervical Collar	01
17.	Cervical Belts	02
18.	Thoracic Belt / Lumber Belt	01
19.	Lumbar Belt	01
20.	Manual Traction Belt	01
21.	Manual Muscle Tester	01
22.	Blood Pressure Measuring instrument	01
23.	Stethoscope	01
24.	Body Massager	01
25.	Foot Massager	01
26.	Back Leg Chest Dynamometer	01
27.	Body shaper	01
28.	IASTM tools	01
29.	Vacuum cups for cupping therapy	01
30.	Manipulation table	01
31.	LASER unit	01
32.	Portable EMG biofeedback	01
33.	Contrast Bath unit	01
34.	Refrigerator	01
35.	UVR lamp	01
36.	Coordination and Peg boards	10
37.	Bolsters of different sizes	01 each
38.	Wedges	01 each
39.	Vestibular Ball	01 each
40.	Floor Mat/Yoga mat	05
41.	Iontophoresis patch and machine	01
42.	tDCS apparatus	01
43.	Large plastic tub for foot bath	01
44.	Skin resistance and treatment trays -plastic	10
45.	CBR bag/Kit	01
46.	AMBU	01
47.	Postural drainage/tilt table	01
48.	Suction apparatus	01
49.	Incentive spirometer	01
50.	Sensory examination kit	01
51.	Tuning fork -512 Hz	01

SYLLABUS - BACHELOR OF PHYSIOTHERAPY

ATAL BIHARI VAJPAYEE MEDICAL UNIVERSITY, LUCKNOW

128 | Page

52	Microwave diathermy	01
S.No	Name of Equipment	Quantity
1	Quadriceps Table	01
2	Static Cycle	01
3	Rowing Machine	01
4	Parallel Bars	01
5	Postural Mirror	01
6	Shoulder Wheel	01
7	Pulley Exerciser	01
8	Supinator Pronator	01
9	Goniometer	01
10	Weight Cuffs Set	02
11	Dumbles	06
12	Clinical Hammer	01
13	Measuring Tape	01
14	Suspension Frame	01
15	Hand Exerciser	01
16	Weighing Machine	01
17	Axillary Crutches	01 Pair
18	Elbow crutch	01
19	(a) Tripod Stick	01
	(b) Quadripod Stick	01
20	Walker	02
21	Walking Stick	02
22	Rolled Gange	06
23	Examination Table	02
24	Jogger	01
25	Stepper	01

Furniture		
S.No.	Item	Quantity
1	Wooden Beds (High Height) with Mattress	10
2	Wooden Beds (Low Height) with Mattress	3

SYLLABUS - BACHELOR OF PHYSIOTHERAPY

3	Wooden Stool (with seat)	13
4	Almirah (for equipment accessories)	1
5	Doctor's Table	1
6	Revolving Chair	1
7	Examination Bed (with Shelf)	1
8	X Ray Box	1
9	Patient's Waiting (Three Seater)	2
10	Wooden Movable Racks	13
11	Step Stool	10

B. Short answer type :

5x6=30

1.

2.

3.

4.

5.

C. Very short answer type:

10x2=20

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

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कुम्भपति

अटल बिहारी वाजपेयी चिकित्सा विश्वविद्यालय,
लखनऊ

SAMPLE QUESTION PAPER

Roll No:.....

Paper code : BPT-XXX

Bachelor of Physiotherapy

_____ Year (Main/supple.) Examination, 202__

Paper- _____

Sub: _____

Time: 3 Hours

Maximum

Marks: 80

Note: All questions are compulsory, attempt all questions in serial order

A. Long answer type :

3x10=30

1.

2.

3.