ROYAL GLOBAL UNIVERSITY
GUWAHATI

ROYAL SCHOOL OF MEDICAL & ALLIED SCIENCES (RSMAS)

DEPARTMENT OF PHYSIOTHERAPY

Course Structure & Syllabus
(Based on National Education Policy 2020)

For Undergraduate Program

BACHELOR OF PHYSIOTHERAPY
(4.5 Years Single Major)

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TABLE OF CONTENTS

Preamble

The National Education Policy (NEP) 2020 conceives a new vision for India's higher education system. It recognizes that higher education plays an extremely important role in promoting equity, human as well as societal well-being and in developing India as envisioned in its Constitution. It is desired that higher education will significantly contribute towards sustainable livelihoods and economic development of the nation as India moves towards becoming a knowledge economy and society.

If we focus on the 21st century requirements, the higher education framework of the nation must aim to develop good, thoughtful, well-rounded, and creative individuals and must enable an individual to study one or more specialized areas of interest at a deep level, and also develop character, ethical and Constitutional values, intellectual curiosity, scientific temper, creativity, spirit of service, and twenty-first-century capabilities across a range of disciplines including sciences, social sciences, arts, humanities, languages, as well as professional, technical, and vocational subjects.

Towards the attainment of holistic and multidisciplinary education, the flexible curricula of the University will include credit-based courses, projects in the areas of community engagement and service, environmental education, and value-based education. As part of holistic education, students will also be provided with opportunities for internships with local industries, businesses, artists, crafts persons, and so on, as well as research internships with faculty and researchers at the University, so that students may actively engage with the practical aspects of their learning and thereby improve their employability.

The undergraduate curriculums are diverse and have varied subjects to be covered to meet the needs of the programs. As per the recommendations from the UGC, introduction of courses related to Indian Knowledge System (IKS) is being incorporated in the curriculum structure which encompasses all of the systematized disciplines of Knowledge which were developed to a high degree of sophistication in India from ancient times and all of the traditions and practices that the various communities of India—including the tribal communities—have evolved, refined and preserved over generations, like for example Vedic Mathematics, Vedangas, Indian Astronomy, Fine Arts, Metallurgy, etc.

At RGU, we are committed that at the societal level, higher education will enable each student to develop themselves to be an enlightened, socially conscious, knowledgeable, and skilled citizen who can find and implement robust solutions to its own problems.

1. Introduction

The National Education Policy (NEP) 2020 clearly indicates that higher education plays an extremely important role in promoting human as well as societal well-being in India. As envisioned in the 21st-century requirements, quality higher education must aim to develop good, thoughtful, well-rounded, and creative individuals. According to the new education policy, assessments of educational approaches in undergraduate education will integrate the humanities and arts with Science, Technology, Engineering and Mathematics (STEM) that will lead to positive learning outcomes. This will lead to develop creativity and innovation, critical thinking and higher-order thinking capacities, problem-solving abilities, teamwork, communication skills, more in-depth learning, and mastery of curricula across fields, increases in social and moral awareness, etc., besides general engagement and enjoyment of learning. and more in-depth learning.

The NEP highlights that the following fundamental principles that have a direct bearing on the curricula would guide the education system at large, viz.

i. Recognizing, identifying, and fostering the unique capabilities of each student to promote her/his holistic development.
ii. Flexibility, so that learners can select their learning trajectories and programmes, and thereby choose their own paths in life according to their talents and interests.
iii. Multidisciplinary and holistic education across the sciences, social sciences, arts, humanities, and sports for a multidisciplinary world.
iv. Emphasis on conceptual understanding rather than rote learning, critical thinking to encourage logical decision-making and innovation; ethics and human & constitutional values, and life skills such as communication, teamwork, leadership, and resilience.
v. Extensive use of technology in teaching and learning, removing language barriers, increasing access for Divyang students, and educational planning and management.
vi. Respect for diversity and respect for the local context in all curricula, pedagogy, and policy. Equity and inclusion as the cornerstone of all educational decisions to ensure that all students can thrive in the education system and the institutional environment are responsive to differences to ensure that high-quality education is available for all. Rootedness and pride in India, and its rich, diverse, ancient, and modern culture, languages, knowledge systems, and traditions.

Physical Therapy (PT) /Physiotherapy is a movement science with an established theoretical and scientific base and widespread clinical applications in the Prevention, Restoration & Rehabilitation,

Maintenance and Promotion of optimal physical function. Physiotherapists diagnose and manage movement dysfunction and enhance physical and functional abilities. This physical dysfunction may be the sequelae of involvement of any of the systems like Musculoskeletal, Neurological, Cardiovascular, Respiratory, or other body systems.

These practitioners contribute to society and the profession through practice, teaching, administration, and the discovery and application of new knowledge about physiotherapy experiences of sufficient excellence and breadth by research to allow the acquisition and application of essential knowledge, skills, and behaviors as applied to the practice of physiotherapy. Physiotherapists (PT) are autonomous, effective, and compassionate professionals, who practice collaboratively in a variety of healthcare set ups such as neonatal to geriatric, from critical care to community fitness to sports training. Emerging graduate and post graduate students are required to demonstrate a substantial knowledge base, possess skills related to Physiotherapy practices, possess high emotional quotient to address family health and meet community responsibilities, demonstrate gender sensitivity and socio-culturally relevant competence. They should be aware of legal issues governing professional practice and follow evidence-based clinical practices.

2. Approach towards Curriculum Planning:

2.1. Credits in Indian Context:

2.1.1. Choice Based Credit System (CBCS) by UGC

Under the CBCS system, the requirement for awarding a degree or diploma or certificate is prescribed in terms of the number of credits to be earned by the students. This framework is being implemented in several universities across States in India. The main highlights of CBCS are as below:

• The CBCS provides flexibility in designing curriculum and assigning credits based on the course content and learning hours.

• The CBCS provides for a system wherein students can take courses of their choice, learn at their own pace, undergo additional courses, and acquire more than the required credits, and adopt an interdisciplinary approach to learning.

• CBCS also provides opportunity for vertical mobility to students from a bachelor's degree programme to masters and research degree programmes.

2.2. Definitions:

2.2.1. Academic Credit

An academic credit is a unit by which a course is weighted. It is fixed by the number of hours of instructions offered per week. As per the National Credit Framework.

1 Credit = 30 NOTIONAL CREDIT HOURS (NCH)

Yearly Learning Hours = 1200 Notional Hours (@40 Credits x 30 NCH)

30 Notional Credit Hours		
Lecture/Tutorial	**Practicum**	**Experiential Learning**
1 Credit = 15 -22 Lecture Hours	10-15 Practicum Hours	0-8 Experiential Learning Hours

2.2.2. Course of Study:

Course of study indicates pursuance of study in Physiotherapy. This course shall offer Major Courses (Core),Skill Enhancement Courses (SEC), Value Added Courses (VAC), Ability Enhancement Compulsory Courses (AECCs) and Interdisciplinary courses.

2.2.3. Disciplinary Major:

The major would provide the opportunity for a student to pursue in-depth study of a particular subject in Physiotherapy. Advanced-level disciplinary/interdisciplinary courses, a course in research methodology, and a project/dissertation will be conducted in the eighth semester. The final semester will be devoted to seminar presentation, preparation, and submission of project report/dissertation. The project work/dissertation will be on a topic in the disciplinary programme of Physiotherapy.

2.2.4. Courses from Other Disciplines (Interdisciplinary):

All UG students are required to undergo 3 introductory-level courses relating to any of the broad disciplines given below. These courses are intended to broaden the intellectual experience and form part of liberal arts and science education. Students are not allowed to choose or repeat courses already undergone at the higher secondary level (12th class) in the proposed major and minor stream under this category.

i. Natural and Physical Sciences: Students can choose basic courses from disciplines such as Natural Science, for example, Biology, Botany, Zoology, Biotechnology, Biochemistry, Chemistry, Physics, Biophysics, Astronomy and Astrophysics, Earth, and Environmental Sciences, etc.

ii. Mathematics, Statistics, and Computer Applications: Courses under this category will facilitate the students to use and apply tools and techniques in their major and minor disciplines. The course may include training in programming software like Python among others and applications software like STATA, SPSS, Tally, etc. Basic courses under this category will be helpful for science and social science in data analysis and the application of quantitative tools.

iii. Library, Information, and Media Sciences: Courses from this category will help the students to understand the recent developments in information and media science (journalism, mass media, and communication)

iv. Commerce and Management: Courses include business management, accountancy, finance, financial institutions, fintech, etc.,

v. Humanities and Social Sciences: The courses relating to Social Sciences, for example, Anthropology, Communication and Media, Economics, History, Linguistics, Political Science, Psychology, Social Work, Sociology, etc. will enable students to understand the individuals and their social behavior, society, and nation. Students be introduced to survey methodology and available large-scale databases for India. The courses under humanities include, for example, Archaeology, History, Comparative Literature, Arts & Creative expressions, Creative Writing and Literature,

language(s), Philosophy, etc., and interdisciplinary courses relating to humanities. The list of Courses can include interdisciplinary subjects such as Cognitive Science, Environmental Science, Gender Studies, Global Environment & Health, International Relations, Political Economy and Development, Sustainable Development, Women's, and Gender Studies, etc. will be useful to understand society.

2.2.5. Ability Enhancement Courses (AEC): Modern Indian Language (MIL) & English language focused on language and communication skills. Students are required to achieve competency in a Modern Indian Language (MIL) and in the English language with special emphasis on language and communication skills. The courses aim at enabling the students to acquire and demonstrate the core linguistic skills, including critical reading and expository and academic writing skills, that help students articulate their arguments and present their thinking clearly and coherently and recognize the importance of language as a mediator of knowledge and identity. They would also enable students to acquaint themselves with the cultural and intellectual heritage of the chosen MIL and English language, as well as to provide a reflective understanding of the structure and complexity of the language/literature related to both the MIL and English language. The courses will also emphasize the development and enhancement of skills such as communication, and the ability to participate/conduct discussion and debate.

2.2.6. Skill Enhancement Course (SEC): These courses are aimed at imparting practical skills, hands-on training, soft skills, etc., to enhance the employability of students and should be related to Major Discipline. They will aim at providing hands-on training, competencies, proficiency, and skill to students. SEC course will be a basket course to provide skill-based instruction.

2.2.7. Value-Added Courses (VAC):

i. Understanding India: The course aims at enabling the students to acquire and demonstrate the knowledge and understanding of contemporary India with its historical perspective, the basic framework of the goals and policies of national development, and the constitutional obligations with special emphasis on constitutional values and fundamental rights and duties. The course would also focus on developing an understanding among student-teachers of the Indian knowledge systems, the Indian education system, and the roles and obligations of teachers to the nation in general and to the school/community/society. The course will attempt to deepen knowledge about and understanding of India's freedom struggle and of the values and ideals that it represented to develop an appreciation of the contributions made by people of all sections and regions of the country, and help learners

understand and cherish the values enshrined in the Indian Constitution and to prepare them for their roles and responsibilities as effective citizens of a democratic society.

ii. Environmental science/education: The course seeks to equip students with the ability to apply the acquired knowledge, skills, attitudes, and values required to take appropriate actions for mitigating the effects of environmental degradation, climate change, and pollution, effective waste management, conservation of biological diversity, management of biological resources, forest and wildlife conservation, and sustainable development and living. The course will also deepen the knowledge and understanding of India's environment in its totality, its interactive processes, and its effects on the future quality of people's lives.

iii. Digital and technological solutions: Courses in cutting-edge areas that are fast gaining prominences, such as Artificial Intelligence (AI), 3-D machining, big data analysis, machine learning, drone technologies, and Deep learning with important applications to health, environment, and sustainable living that will be woven into undergraduate education for enhancing the employability of the youth.

iv. Health & Wellness, Yoga education, sports, and fitness: Course components relating to health and wellness seek to promote an optimal state of physical, emotional, intellectual, social, spiritual, and environmental well-being of a person. Sports and fitness activities will be organized outside the regular institutional working hours. Yoga education would focus on preparing the students physically and mentally for the integration of their physical, mental, and spiritual faculties, and equipping them with basic knowledge about one's personality, maintaining self-discipline and self-control, to learn to handle oneself well in all life situations. The focus of sports and fitness components of the courses will be on the improvement of physical fitness including the improvement of various components of physical and skills-related fitness like strength, speed, coordination, endurance, and flexibility; acquisition of sports skills including motor skills as well as basic movement skills relevant to a particular sport; improvement of tactical abilities; and improvement of mental abilities.

2.2.8. Clinical Education:

All students must undergo clinical postings in Multi speciality hospitals, rehabilitation centers from 5th semester onwards. The students are placed in various affiliated set ups to learn assessment of patients from different departments like orthopedics, neurology & post neurosurgical, OBG, general surgery. The students are also trained to treat various cases during 7th & 8th semesters with different skill set which will be taught during practical hours.

2.2.8.1. Community engagement and service: The curricular component of 'community engagement and service' seeks to expose students to the socio-economic issues in society so that the theoretical learnings can be supplemented by actual life experiences to generate solutions to real-life problems. This can be part of summer term activity or part of a major course depending upon the major discipline.

2.2.8.2. Field-based learning/minor project: The field-based learning/minor project will attempt to provide opportunities for students to understand the different socio-economic contexts. It will aim at giving students exposure to development-related issues in rural and urban settings. It will provide opportunities for students to observe situations in rural and urban contexts, and to observe and study actual field situations regarding issues related to socioeconomic development. Students will be given opportunities to gain a first-hand understanding of the policies, regulations, organizational structures, processes, and programmes that guide the development process. They would have the opportunity to gain an understanding of the complex socio-economic problems in the community, and innovative practices required to generate solutions to the identified problems. This may be a summer term project or part of a major or minor course depending on the study.

2.2.9. Indian Knowledge System:

In view of the importance accorded in the NEP 2020 to rooting our curricula and pedagogy in the Indian context all the students who are enrolled in the four-year UG programmes should be encouraged to take an adequate number of courses in IKS so that the ***total credits of the courses taken in IKS amount to at least five per cent of the total mandated credits*** *(i.e., min. 8 credits for a 4 yr. UGP)***.** The students may be encouraged to take these courses, preferably *during the first four semesters of the UG programme*. At least half of these mandated credits should be in courses in disciplines which are part of IKS and are related to the major field of specialization that the student is pursuing in the UG programme. They will be included as a part of the total mandated credits that the student is expected to take in the major field of specialization. The rest of the mandated credits in IKS can be included as a part of the mandated Multidisciplinary courses that are to be taken by every student. All the students should take a Foundational Course in Indian Knowledge System, which is designed to present an overall introduction to all the streams of IKS relevant to the UG programme. The foundational IKS course should be broad-based and cover introductory material on all aspects.

Wherever possible, the students may be encouraged to choose a suitable topic related to IKS for their project work in the 7/8th semesters of the UG programme.

2.2.10. Experiential Learning:

One of the most unique, practical & beneficial features of the National Credit Framework is assignment of credits/credit points/ weightage to the experiential learning including relevant experience and professional levels acquired/ proficiency/ professional levels of a learner/student. Experiential learning is of two types:

a. Experiential learning as part of the curricular structure of academic or vocational program. E.g., projects/OJT/internship/industrial attachments etc. This could be either within the Program-internship/ summer project undertaken relevant to the program being studied or as a part time employment (not relevant to the program being studied- up to certain NSQF level only). In case where experiential learning is a part of the curricular structure the credits would be calculated and assigned as per basic principles of NCrF i.e., 40 credits for 1200 hours of notional learning.

b. Experiential learning as active employment (both wage and self) post completion of an academic or vocational program. This means that the experience attained by a person after undergoing a particular educational program shall be considered for assignment of credits. This could be either Full or Part time employment after undertaking an academic/ Vocation program.

In cases where experiential learning is a part of employment the learner would earn credits as weightage. The maximum credit points earned in this case shall be double of the credit points earned with respect to the qualification/ course completed. The credit earned and assigned by virtue of relevant experience would enable learners to progress in their career through the work hours put in during a job/employment.

2.3. Distribution of Credits:

'Credit' is recognition that a learner has completed a prior course of learning, corresponding to a qualification at a given level. For each such prior qualification, the student would have put in a certain volume of institutional or workplace learning, and the more complex a qualification, the greater the volume of learning that would have gone into it. Credits quantify learning outcomes that are subject achieving the prescribed learning outcomes to valid, reliable methods of assessment.

The ***credit points*** will give the learners, employers, and institutions a mechanism for describing and comparing the learning outcomes achieved. The credit points can be calculated as credits attained multiplied with the credit level.

The workload relating to a course is measured in terms of credit hours. A credit is a unit by which the coursework is measured. It determines the number of hours of instruction required per week over the duration of a semester (minimum 15 weeks).

Each course may have only a lecture component or a lecture and tutorial component or a lecture and practicum component or a lecture, tutorial, and practicum component, or only practicum component.

A course can have a combination of ***lecture credits, tutorial credits, practicum credits and experiential learning credits.***

The following types of courses/activities constitute the programmes of study. Each of them will require a specific number of hours of teaching/guidance and laboratory/studio/workshop activities, field-based learning/projects, internships, and community engagement and service.

- **Lecture courses:** Courses involving lectures relating to a field or discipline by an expert or qualified personnel in a field of learning, work/vocation, or professional practice.
- **Tutorial courses:** Courses involving problem-solving and discussions relating to a field or discipline under the guidance of qualified personnel in a field of learning, work/vocation, or professional practice. Should also refer to the Remedial Classes, flip classrooms and focus on both Slow and Fast Learners of the class according to their merit.
- **Practicum or Laboratory work:** A course requiring students to participate in a project or practical or lab activity that applies previously learned/studied principles/theory related to the chosen field of learning, work/vocation, or professional practice under the supervision of an expert or qualified individual in the field of learning, work/vocation, or professional practice.
- **Seminar:** A course requiring students to participate in structured discussion/conversation or debate focused on assigned tasks/readings, current or historical events, or shared experiences guided or led by an expert or qualified personnel in a field of learning, work/vocation, or professional practice.
- **Clinical Education:** A course requiring students to participate in a professional activity or work experience, or cooperative education activity with an entity external to the education institution, normally under the supervision of an expert of the given external entity. A key aspect of the clinical education is induction into actual work situations. Internships involve working with local hospital, government or private healthcare setups to provide opportunities for students to actively engage in on-site experiential learning.
- **Community engagement and service:** The students needs to participate in field-based learning generally under the supervision of an expert of the given external entity. The curricular component of ‘community engagement and service’ will involve activities like free health care screening

program or free physiotherapy health camps that would expose students to the healthcare burden in society where the theoretical learnings can be supplemented by actual life experiences to generate solutions to real-life problems.

Table:1: Course wise Distribution of Credits

Broad Category of Course	**4-Year UG**
Major (Core)	104
Interdisciplinary	9
Ability Enhancement Courses (AEC)	8
Skill Enhancement Courses (SEC)	9
Value Added Courses common for all UG	6
Clinical Education	20
Research Project / Dissertation	12
MOOCs courses	12
Total	**180**

Table 3: Credit Distribution for 4-year Course

Semester	**Total**								
	Major	**ID**	**AEC**	**SEC**	**VAC**	**SI**	**RP**	**MOOCs**	
I	9	3	2	3	3	0	0	3	**23**
II	9	3	2	3	3	0	0	3	**23**
III	12	3	2	3	0	0	0	3	**23**
IV	18	0	2	0	0	0	0	3	**23**
V	21	0	0	0	0	0	0		**21**
VI	21	0	0	0	0	0	0		**21**

VII	21	0	0	0	0	0	0		**21**
VIII	13	0	0	0	0	0	12		**25**
	124	**9**	**8**	**9**	**6**	**0**	**12**	**12**	**180**

2.4. Levels of Courses

2.4.1 NHEQF levels:

The NHEQF levels represent a series of sequential stages expressed in terms of a range of learning outcomes against which typical qualifications are positioned/located. NHEQF level 4.5 represents learning outcomes appropriate to the first year (first two semesters) of the undergraduate programme of study, while Level 8 represents learning outcomes appropriate to the doctoral-level programme of study.

Table: 4: NHEQF Levels

NHEQF level	**Examples of higher education qualifications located within each level**	**Credit Requirements**
Level 4.5	Undergraduate Certificate. Programme duration: First year (first two semesters) of the undergraduate programme, followed by an exit 4-credit skills-enhancement course(s).	40
Level 5	Undergraduate Diploma. Programme duration: First two years (first four semesters) of the undergraduate programme, followed by an exit 4-credit skills-enhancement course(s) lasting two months.	80
Level 5.5	Bachelor's Degree. Programme duration: First three years (Six semesters) of the four-year undergraduate programme.	120
Level 6	Bachelor's Degree (Honours/ Honours with Research). Programme duration: Four years (eight semesters).	160

2.5. Course Code based on Learning Outcomes:

Courses are coded based on the learning outcomes, level of difficulty, and academic rigor. The coding structure is as follows:

i. 0-99: ***Pre-requisite courses*** required to undertake an introductory course which will be a pass or fail course with no credits. It will replace the existing informal way of offering bridge courses that are conducted in some of the colleges/ universities.

ii. 100-199: ***Foundation or introductory courses*** that are intended for students to gain an understanding and basic knowledge about the subjects and help decide the subject or discipline of interest. These courses may also be prerequisites for courses in the major subject. These courses generally would focus on foundational theories, concepts, perspectives, principles, methods, and procedures of critical thinking to provide a broad basis for taking up more advanced courses.

iii. 200-299: ***Intermediate-level courses*** including subject-specific courses intended to meet the credit requirements for minor or major areas of learning. These courses can be part of a major and can be pre-requisite courses for advanced-level major courses.

iv. 300-399: ***Higher-level courses*** which are required for majoring in a disciplinary/interdisciplinary area of study for the award of a degree.

v. 400-499: Advanced courses which would include lecture courses with practicum, seminar-based course, term papers, research methodology, advanced laboratory experiments/software training, research projects, hands-on-training, internship/apprenticeship projects at the undergraduate level or First year post-graduate theoretical and practical courses.

vi. 500-599: ***Courses at first-year PG degree level*** for a 2-year post-graduate degree programme

vii. 600-699: ***Courses for second year of 2-year PG*** or 1-year post-graduate degree programme

viii. 700 -799 & above: Courses limited to doctoral students.

3. Award of Degree in Physiotherapy

The structure and duration of undergraduate programmes of study offered by the University as per NEP 2020 include:

3.1. Undergraduate programmes of 4.5 year duration with Single Major, with multiple entry and exit options, with appropriate certifications:

3.1.1. UG Certificate: Students who opt to exit after completion of the first year and have secured 40 credits will be awarded a UG certificate if, in addition, they complete one vocational course of 4 credits during the summer vacation of the first year. These students are allowed to re-enter the degree programme within three years and complete the degree programme within the stipulated maximum period of seven years.

3.1.2. UG Diploma: Students who opt to exit after completion of the second year and have secured 80 credits will be awarded the UG diploma if, in addition, they complete one vocational course of 4 credits during the summer vacation of the second year. These students are allowed

to re-enter within a period of three years and complete the degree programme within the maximum period of seven years.

3.1.3. 3-year UG Degree: Students who will undergo a 3-year UG programme will be awarded UG Degree in the Major discipline after successful completion of three years, securing 120 credits and satisfying the minimum credit requirement.

3.1.4. 4-year UG Degree (Honours): A four-year UG Honours degree in the major discipline will be awarded to those who complete a four-year degree programme with 160 credits and have satisfied the credit requirements as given in table 2 in Section 5.

3.1.5. 4-year UG Degree (Honours with Research): Students who secure 75% marks and above in the first six semesters and wish to undertake research at the undergraduate level can choose a research stream in the fourth year. They should do a research project or dissertation under the guidance of a Faculty Member of the University. The research project/dissertation will be in the major discipline. The students who secure 160 credits, including 12 credits from a research project/dissertation, will be awarded UG Degree (Honours with Research).

(Note: ***UG Degree Programmes with Single Major:*** A student must secure a minimum of 50% credits from the major discipline for the 3-year/4-year UG degree to be awarded a single major. For example, in a 3-year UG programme, if the total number of credits to be earned is 120, a student of Mathematics with a minimum of 60 credits will be awarded a B.Sc. in Mathematics with a single major. Similarly, in a 4-year UG programme, if the total number of credits to be earned is 160, a student of Chemistry with a minimum of 80 credits will be awarded a B.Sc. (Hons. /Hon. With Research) in Chemistry in a 4-year UG programme with single major. Also, the **4-year Bachelor's degree programme with Single Major** is considered as the preferred option since it would allow the opportunity to experience the full range of holistic and multidisciplinary education in addition to a focus on the chosen major and minors as per the choices of the student.)

Table: 5: Award of Degree and Credit Structure with ME-ME

Award	Year	Credits to earn	Additional Credits	Re-entry allowed within (yrs)	Years to Complete
UG Certificate	1	40	4	3	7
UG Diploma	2	80	4	3	7
3-year UG Degree (Major)	3	120	X	x	X
4-year UG Degree (Honours)	4	160	X	x	X
4-year UG Degree (Honors with Research):	4	160	Students who secure cumulative 75% marks and above in the first six semesters		

4. Learning Outcomes

4.1 The Graduate Attributes

As per the NHEQF, each student on completion of a programme of study must possess and demonstrate the expected ***Graduate Attributes*** acquired through one or more modes of learning, including direct in-person or face-to-face instruction, online learning, and hybrid/blended modes. The graduate attributes indicate the quality and features or characteristics of the graduate of a programme of study, including learning outcomes relating to the disciplinary area(s) relating to the chosen field(s) of learning and generic learning outcomes that are expected to be acquired by a graduate on completion of the programme(s) of study.

The graduate profile/attributes include,

- capabilities that help widen the current knowledge base and skills,
- gain and apply new knowledge and skills,
- undertake future studies independently, perform well in a chosen career, and
- play a constructive role as a responsible citizen in society.

The graduate profile/attributes are acquired incrementally through development of cognitive levels and describe a set of competencies that are transferable beyond the study of a particular subject/disciplinary area and programme contexts in which they have been developed.

Graduate attributes include,

- ***learning outcomes that are specific to disciplinary areas*** relating to the chosen field(s) of learning within broad multidisciplinary/interdisciplinary/ transdisciplinary contexts.
- ***generic learning outcomes*** that graduate of all programmes of study should acquire and demonstrate.

Table: 6: The Learning Outcomes Descriptors and Graduate Attributes

Sl.no.	**Graduate Attribute**	**The Learning Outcomes Descriptors** ***(The graduates should be able to demonstrate the capability to:)***
GA1	Disciplinary Knowledge	acquire knowledge and coherent understanding of the chosen disciplinary/interdisciplinary areas of study.
GA 2	Complex problem solving	solve different kinds of problems in familiar and non-familiar contexts and apply the learning to real-life situations.
GA 3	Analytical & Critical thinking	apply analytical thought including the analysis and evaluation of policies, and practices. Able to identify relevant assumptions or implications. Identify logical flaws and holes in the arguments of others. Analyse and synthesize data from a variety of sources and draw valid conclusions and support them with evidence and examples.
GA 4	Creativity	create, perform, or think in different and diverse ways about the same objects or scenarios and deal with problems and situations that do not have simple solutions. Think 'out of the box' and generate solutions to complex problems in unfamiliar contexts by adopting innovative, imaginative, lateral thinking, interpersonal skills, and emotional intelligence.
GA 5	Communication Skills	listen carefully, read texts and research papers analytically, and present complex information in a clear and concise manner to different groups/audiences. Express thoughts and ideas effectively in writing and orally and communicate with others using appropriate media.
GA 6	Research-related skills	develop a keen sense of observation, inquiry, and capability for asking relevant/ appropriate questions. Should acquire the ability to problematize, synthesize and articulate issues and design research proposals, define problems, formulate appropriate and relevant research questions, formulate hypotheses, test hypotheses using quantitative and qualitative data, establish hypotheses, make inferences based on the analysis and interpretation of data, and predict cause-and-effect

Sl.no.	Graduate Attribute	The Learning Outcomes Descriptors *(The graduates should be able to demonstrate the capability to:)*
		relationships. Should develop the ability to acquire the understanding of basic research ethics and skills in practicing/doing ethics in the field/ in personal research work.
GA 7	Collaboration	work effectively and respectfully with diverse teams in the interests of a common cause and work efficiently as a member of a team.
GA 8	Leadership readiness/qualities	plan the tasks of a team or an organization and setting direction by formulating an inspiring vision and building a team that can help achieve the vision.
GA 9	Digital and technological skills	use ICT in a variety of learning and work situations. Access, evaluate, and use a variety of relevant information sources and use appropriate software for analysis of data.
GA 10	Environmental awareness and action	mitigate the effects of environmental degradation, climate change, and pollution. Should develop the technique of effective waste management, conservation of biological diversity, management of biological resources and biodiversity, forest and wildlife conservation, and sustainable development and living.

4.2. Program Learning Outcomes

The outcomes described through learning outcome descriptors are attained by students through learning acquired on the completion of a programme of study relating to the chosen fields of learning, work/vocation, or an area of professional practice. The term 'programme' refers to the entire scheme of study followed by learners leading to a qualification. Individual programmes of study will have defined learning outcomes that must be attained for the award of a specific certificate/diploma/degree.

The programme learning outcomes focusses on knowledge and skills that prepare students for further study, employment, and responsible citizenship.

Table: 7: The Programme Learning Outcome Descriptors

Sl.no.	Programme Learning Outcome	The Programme Learning Outcomes Descriptors *The graduates will acquire the following:*
PLO 1	Knowledge about Physiotherapy Profession	To demonstrate behavioral skills and humanitarian approach while communicating with patients, relatives, society at large and co-professionals

Sl.no.	Programme Learning Outcome	The Programme Learning Outcomes Descriptors *The graduates will acquire the following:*
PLO 2	Develop the ability to solve complex problems	To apply and outline pathology of medical conditions in context with Physiotherapy, interpret& use medical communication.
PLO 3	Develop Critical and analytical thinking skills	To apply knowledge of biomechanics of human movement in musculoskeletal, neurological, and cardio-respiratory conditions in planning, recommending, and executing Physiotherapy management. Also, to demonstrate academics skills and knowledge to understand the structural & functionality of human body with applied anatomy and physiology in physiotherapy practice.
PLO 4	Develop and Demonstrate Creativity	To demonstrate academic skills and knowledge related to understanding the structural and functional of human body and applied anatomy, physiology in physiotherapy practice.
PLO 5	Develop effective Communication Skills	To develop communication skills for taking patient assessment and applying examinations skills to deliver proper case specific management program.
PLO 6	Develop Research-related Skills	To outline and implement Physiotherapy management by co-relating assessment and examination skills of clinical subjects like Orthopedics, General Surgery, Medicine, Neurology, Pediatrics', Dermatology & Gynecology & Obstetrics, Community Medicine.
PLO 7	Develop the ability to Collaborate and execute teamwork	To demonstrate skill in developing teamwork approach in managing various conditions who require multidisciplinary medical management including medical professionals, social workers, and other related professionals.
PLO 8	Develop Leadership Qualities	To demonstrate leadership quality in managing various health conditions pertaining to rehabilitation.
PLO 9	Develop technological and Digital skills	To be able to apply the knowledge of digital and technical skills for presenting seminars, making project reports, case reports of patient assessment.
PLO 10	Develop the ability to Identify & address the Environmental Issues	To describe and analyze concepts of energy conservation, global warming and pollution and justify optimal use of available resources & to demonstrate ability of critical thinking, scientific enquiry, experiential learning, personal finance, entrepreneurship, and managerial skills related to task in day-to-day work for personal & societal growth.

4.3. Programme Specific Learning Outcomes (PSOs):

PSO1. Acquire, assess, apply, and integrate new knowledge, learn to adapt to changing circumstances and ensure that patients receive the highest level of professional care.

PSO2. Establish the foundations for lifelong learning and continuing professional development, including a professional development portfolio containing reflections, achievements and learning needs.

PSO3. Continually and systematically reflect on practice and, whenever necessary, integrate that reflection into action, using improvement techniques and audit.

PSO4. Manage time and prioritize tasks, and work autonomously when necessary and appropriate.

5. Teaching Learning Process

Teaching and learning in this programme involve classroom lectures as well as tutorial and remedial classes.

Tutorial classes: Tutorials allow closer interaction between students and teacher as each student gets individual attention. The tutorials are conducted for students who are unable to achieve average grades in their weekly assessments. Tutorials are divided into three categories, viz. discussion-based tutorials (focusing on deeper exploration of course content through discussions and debates), problem-solving tutorials (focusing on problem solving processes and quantitative reasoning), and Q&A tutorials (students ask questions about course content and assignments and consolidate their learning in the guiding presence of the tutor).

Flip classroom: Flip classroom allows lecture content from face-to-face class time to before class by assigning it as homework. This allows for more interactive forms of learning to take place during class.

Remedial classes: The remedial classes are conducted for students who achieve average and above average grades in their weekly assessments. The focus is laid to equip the students to perform better in the exams/assessments. The students are divided into small groups to provide dedicated learning support. Tutors are assigned to provide extra time and resources to help them understand concepts with advanced nuances. Small groups allow tutors to address their specific needs and monitor them. Following methods are adopted for tutorial and remedial classes:

• Written assignments and projects submitted by students

• Project-based learning

• Group discussions

• Home assignments

• Class tests, quizzes, debates organized in the department

• Seminars and conferences

• Extra-curricular activities like cultural activities, community outreach programmes etc.

• Field trip, excursions, study tour, interacting with eminent authors, etc.

Experiential Learning: Experiential learning is a part of the curricular structure of the BPT program. E.g., projects/OJT/internship/industrial attachments etc. This could be either within the program-internship/ summer project undertaken relevant to the program being studied or as a part time employment.

6. Assessment Methods

Sl. No.	**Components of evaluation**	**Marks**	**Frequency**	**Code**	**Weightage (%)**
A. Continuous Evaluation					
i.	Analysis/ Class Test	Combination of any 3 from i. to v. with 5 marks each (15 marks)	1 – 3	C	25%
Ii	Home assignments		1 – 3	H	
Iii	Project		1	P	
Iv	Seminar		1 – 2	S	
V	Viva-Voce/ Presentations		1 – 2	V	
Vi	Mid semester Examinations	10	1	Q/CT	
Vii	Attendance	5	Every month	A	5%
B. Semester End Evaluation					
i.	Semester End examination	70	1	SEE	70%
Total					100%

7. Programme Structure

SL.NO.	SUBJECT CODE	NAMES OF SUBJECTS	COURSE LEVEL	CREDIT	L	T	P
MAJOR COURSES							
1	PHT242M101/ PHT242M111	Human Anatomy-I (T&L)	100	3	2	1	2
2	PHT242M102/ PHT242M112	Human Physiology-I (T&L)	100	3	2	1	2
3	PHT242M103/PHT242M113	Biomechanics-I(T&L)	100	3	2	1	2
INTERDISCIPLINARY COURSE							
5	IKS992K101	IKS-I	100	3	3	0	0
ABILITY ENHANCEMENT COURSE							
6	CEN982A101 / BHS982A102	Communicative English and Behavioral Science-I	100	2	2	0	0
SKILL ENHANCEMENT COURSE (SEC)							
7	PHT242S101	Biochemistry	100	3	3	0	0
VALUE ADDED COURSE							
8	VAC-1	To be selected from the pool of courses offered	100	3	3	0	0
9	MOOCs course (SWAYAM)	To be selected from the pool of courses offered	100	3			
TOTAL				**23**			
BPT 2ND SEMESTER							
MAJOR COURSES							
1	PHT242M201/PHT242M211	Human Anatomy-	100	3	2	1	2

2	PHT242M202/PHT242M212	Human Physiology-II	100	3	2	1	2
3	PHT242M203/PHT242M213	Biomechanics-II(T&L)	100	3	2	1	2
INTERDISCIPLINARY COURSE							
4	IKS992K201	IKS-2	100	3	3	0	0
ABILITY ENHANCEMENT COURSE (AEC)							
5	CEN982A201 &BHS982A202	Communicative English and Behavioral Science-II	100	2	2	0	0
SKILL ENHANCEMENT COURSE (SEC)							
6	PHT242S201	Psychology & Sociology	100	3	3	0	0
VALUE ADEED COURSE							
8	VAC-2	Selected from the pool of courses offered	100	3	3	0	0
9	MOOCs (SWAYAM)	To be selected from the pool of courses offered	100	3			
TOTAL				**23**			
BPT 3RD SEMESTER							
MAJOR COURSE							
1	PHT242M301/PHT242M311	Electrotherapy-I(T&L)	200	4	3	1	2
2	PHT242M302/PHT242M312	Exercise Therapy-I (T&L)	200	4	3	1	2
3	PHT242M303	Pathology & Microbiology-I	200	4	4	0	0
INTERDISCIPLINARY COURSE							

4	PHT242I301	IKS-3	200	3	3	0	0
ABILITY ENHANCEMENT COURSE (AEC)							
5	CEN982A301&BHS982A302	Communicative English and Behavioral Science-III	200	2	2	0	0
SKILL ENHANCEMENT COURSE (SEC)							
6	PHT242S301	Pharmacology	200	3	3	0	0
7	MOOCs (SWAYAM)	To be selected from the pool of	200	3			
TOTAL				**23**			
BPT 4TH SEMESTER							
MAJOR COURSES							
1	PHT242M401/PHT242M411	Electrotherapy-II(T&L)	200	4	3	1	2
2	PHT242M402/PHT242M412	Exercise Therapy-II (T&L)	200	4	3	1	2
3	PHT242M403	General Medicine	200	3	3	0	0
4	PHT242M404	General Surgery & OBG	200	3	3	0	0
5	PHT242M405	Pathology & Microbiology-II	200	4	4	0	0
ABILITY ENHANCEMENT COURSE (AEC)							
7	CEN982A401 &BHS982A402	Communicative English and Behavioral Science-IV	200	2	2	0	0
8	MOOCs (SWAYAM)	To be selected from the pool of courses offered	200	3			
TOTAL				**23**			
BPT 5TH SEMESTER							
MAJOR COURSES							
1	PHT242M501	Clinical Orthopedics –I	300	4	4	1	0
2	PHT242M502	Clinical	300	4	4	1	0

		Neurology & Neurosurgery-I					
3	PHT242M503	Community Medicine	300	4	4	1	0
4	PHT242M504	Research Methodology & Ethics	300	4	4	1	0
4	PHT242M511	Clinical Education-I	200	5	0	0	10
TOTAL				**21**			
BPT 6th SEMESTER							
MAJOR COURSES							
1	PHT242M601	Clinical Orthopedics -II	300	4	4	1	0
2	PHT242M602	Clinical Neurology & Neurosurgery-II	300	4	4	1	0
3	PHT242M603/PHT242M611	PT in Cardiorespiratory & General Surgical Conditions-I (T&L)	300	4	3	1	2
4	PHT242M604/PHT242M612	Community Based Rehabilitation (T&L)	300	4	3	1	2
5	PHT242M613	Clinical Education –II	300	5	0	0	10
TOTAL				**21**			
BPT 7TH SEMESTER							
MAJOR COURSES							
1	PHT242M701/PHT242M711	PT in Orthopedics & Traumatology-I (T&L)	400	4	3	1	2
2	PHT242M702/PHT242M712	PT in Neurological & Psychosomatic Conditions-I(T&L)	400	4	3	1	2

3	PHT242M703/PHT242M713	PT in Cardiorespiratory, Surgical & OBG Conditions-II(T&L)	400	4	3	1	2
4	PHT242M714	Clinical Education –III	400	5	0	0	10
5	PHT242M704	Orthotics & Prosthetics	300	4	4	0	0
TOTAL				**21**			
BPT 8TH SEMESTER							
MAJOR COURSES							
1	PHT242M801/PHT242M811	PT in Orthopedics & Traumatology-II (T&L)	400	4	3	1	2
2	PHT242M802/PHT242M812	PT in Neurological & Psychosomatic Conditions-II(T&L)	400	4	3	1	2
3	PHT242M821	Research project	400	12	0	0	24
4	PHT242M813	Clinical Education IV	400	5	0	0	10
TOTAL				**25**			

BPT 9TH SEMESTER – Rotatory Clinical Internship
Students will undergo mandatory rotatory clinical internship program of six months duration in various hospitals, rehabilitation centres and sports training centre which covers the different areas of musculoskeletal, neurological, paediatric, cardiopulmonary, sports rehabilitation, community based rehabilitation within and outside Assam.

8. Detailed Syllabus:

Semester I

Title of the Paper: HUMAN ANATOMY-I(T&L) **Course: (Major)**

Subject Code: PHT242M101 **Course Level: 100**

Scheme of Evaluation: Theory + Practical

L-T-P-C: 2-1-2-3 **Total credits: 3**

Course Objectives

Identify all gross anatomical structures, particular emphasis will be placed on description of bones, joints, muscles, brain, cardio-pulmonary and nervous systems as these relate to the application of Physiotherapy. Understanding the different type of classification and general features of bone, joints and muscular tissues.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Explain** the anatomy of upper quadrant including spine, thorax and upper extremities.	**BT 1**
CO 2	**Understand** the bones, joints, soft tissues, muscles related to musculoskeletal system of upper extremities and to localize various surface landmarks of face, neck, spinal cord.	**BT 2**
CO 3	**Demonstrate** the bones, muscles, nerves, and ligaments of the upper extremities.	**BT 3**
CO 4	**Analyze** the course of peripheral nerves including their functions and structures.	**BT 3**

COURSE OUTLINE:

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	**General Anatomy:** Introduction to Anatomy, terms and terminology. Regions of Body, Cavities and systems. Surface anatomy – musculo-skeletal, vascular, cardiopulmonary system General Embryology. Applied anatomy. **Head and Neck:** Facial muscles-origin, insertion, actions, nerve supply Temporomandibular joints-structure, types of movement Spine and Thorax: Back muscles-superficial layer, deep muscles of back, their origin,	**10**

	insertion, action and nerve supply. Vertebral column-structure and development, structure and joints of vertebrae Applied Anatomy.	
II	**Musculoskeletal system:** Connective tissue & its modification, tendons, membranes, special connective tissue. Bone structure, blood supply, growth, ossification, and classification. Muscle classification, structure and functional aspect. Joints – classification, structures of joints, movements, range, limiting factors, stability, blood supply, nerve supply, dislocations and applied anatomy. Introduction to Upper Limb, Bones,Joints of Upper limb, Axilla, Pectoral region,The back, Scapular region, Arm, forearm and Hand, Nerve supply, blood supply and lymphatic drainage of upper limb.	**10**
III	**Nervous system:** Classification of nervous system Nerve – structure, classification, microscopy with examples. Neurons, classification with examples. Simple reflex arc. Parts of a typical spinal nerve/Dermatome Central nervous system – disposition, parts and functions Cerebrum Cerebellum Midbrain & brain stem Blood supply & anatomy of brain Spinal cord- anatomy, blood supply, nerve pathways Pyramidal, extra pyramidal system Thalamus, hypothalamus Structure and features of meninges Ventricles of brain, CSF circulation Development of nervous system & defects Cranial nerves – (course, distribution, functions and palsy) Sympathetic nervous system, its parts and components Parasympathetic nervous system Applied anatomy	**10**
IV	**Sensory system:** Structure and function of: Visual system Auditory system Gustatory system Olfactory system Somato sensory system	**6**
TOTAL		**36**

Text Books:

1.BD Chaurasia's Human Anatomy, Regional and Applied dissection and clinical upper limb thorax, CBS publishers and Distributors Pvt Ltd, Ninth Edition, volume 1,2,3,4.

2.Khurana, I., Khurana, A., (2018).Textbook of anatomy and physiology, 3rd edition.

Reference Books:

1.Tortora, GJ. &DerriksonB.(2008).Principles of Anatomy and Physiology. Wiley, Global edition.

2.Venkatesh D. Sudhakar H.H. (2016). Basics of anatomy, physiology &microbiology level 1: CBS Publishers & Distributors, 4th edition.

Title of the Paper: HUMAN ANATOMY-I LAB

Subject Code: PHT242M111

Course Objectives

The objective of the course is to introduce students the practical gained regarding anatomy of various structures and the histological appearance of various organs of the human body. Identification of the upper limb bones and their features.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Relate** and understand the normal anatomy of the human body, which will help them to diagnose and treat diseases in the near future.	**BT 1**
CO 2	**Explain** the layers of meninges of the brain and spinal cord and parts of the peripheral nervous system	**BT 2**
CO 3	**Demonstrate** all the muscles, bones, ligaments and nerves of upperlimb and lower limb	**BT 3**
CO 4	A**nalyze and** Identify the parts of the central nervous system; cerebrum, cerebellum, midbrain, pons and medulla oblongata. Spinal cord and parts of the spinal cord	**BT 3**

COURSE OUTLINE:

Modules	**Topics (if applicable) & Course Contents**	**Periods**

I.	Identification and description of all anatomical structures.	**5**
II	The learning of Anatomy is by demonstration only through dissected parts, slides, models, charts, etc	**5**
III	Demonstration of skeleton- articulated and disarticulated of skull, upper limb bones and spinal vertebra	**10**
IV	Surface anatomy upper limb and spine: -surface land mark-bony, muscular and ligamentous. -surface anatomy of major nerves, arteries of the limbs. Points of palpation of nerves and arteries	**4**
TOTAL		**24**

Text Books:

1.BD Chaurasia's Human Anatomy, Regional and Applied dissection and clinical upper limb thorax, CBS publishers and Distributors Pvt Ltd, Ninth Edition, volume 1, 2,3, 4.

2.Alison,G.Anne,W.(2014). Ross and Wilson Anatomy and Physiology in Health and Illness. Elsevier Health; UK,13th edition.

Reference Books:

1. Tortora, GJ. &DerriksonB.(2008).Principles of Anatomy and Physiology. Wiley, Global edition.

2.Venkatesh D. Sudhakar H.H. (2016). Basics of anatomy, physiology &microbiology level 1: CBS Publishers & Distributors, 4th edition.

Experiential learning: Involves engaging students in hands-on, immersive activities to make anatomical concepts memorable like Virtual and Augmented Reality, Body painting, peer teaching, museum or field visits.

Distribution of Credits		
Theory	**Practicum**	**Experiential Learning**
36 hours	24 hours	30 hours

Title of the Paper: Human Physiology-I(T & L) **Course: Major**

Subject Code: PHT242M1012 **Course Level: 100**

Scheme of Evaluation: Theory & Practical **Total credits: 3**

L-T-P-C: 2-1-2-3

Course Objectives

The objective of the course is to demonstrate and understand elementary human physiology dealing with cells, skin, muscle, blood, and other important systems of the body. Detailed knowledge of different types and functions of blood cells. Alteration of normal physiology in terms of different diseases.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**define** different tissues & organs of different systems of human body.	**BT 1**
CO 2	**relate** how abnormal Physiology affects human function and dysfunction of the human body.	**BT 2**
CO 3	**identify** various structural and functional importance of cell, muscle and skin and explain different tissues & organs of different systems of human body.	**BT 2**
CO 4	**examination** of normal human physiology with special emphasis on the functioning of the cardiovascular, musculoskeletal, and nervous systems.	**BT 3**

Course Outline:

N	TOPICS & COURSE CONTENT	PERIODS
1	**General Physiology** Cell: morphology, Structure and function of cell organelles Structure of cell membrane Transport across cell membrane Intercellular communication Homeostasis	6 hours
2	**Blood** Introduction-composition & function of blood W.B.C., R.B.C., Platelets formation & functions, Immunity Plasma: composition, formation & functions, Plasma Proteins:-types &functions Blood Groups- types , significance, determination Hemoglobin Haemostasis Lymph-composition, formation, circulation &functions **Cardiovascular system** Conducting system-components, impulse conduction Heart valves Cardiac cycle- definition, phases of cardiac cycle Cardiac output- definition, normal value, determinants. Stroke volume and its regulation Heart rate and its regulation Arterial pulse, Blood pressure-definition, normal values, factors affecting blood pressure	10 hours

	Shock-definition, classification, causes and features Basic idea of ECG Cardiovascular changes during exercise	
3	**Nerve Muscle Physiology** Muscles- classification, structure, properties, Excitation contraction coupling Motor unit, EMG, factors affecting muscle tension, Muscle tone, fatigue, exercise Nerve –structure and function of neurons, classification, properties Resting membrane potential & Action potential their ionic basis All or None phenomenon Neuromuscular transmission Ionic basis of nerve conduction Concept of nerve injury &Wallerian degeneration Synapses Electrical events in postsynaptic neurons Inhibition & facilitation at synapses Chemical transmission of synaptic activity Principal neurotransmitters.	10 hours
4	**Nervous system** Introduction, central and peripheral nervous system, functions of nervous system Reflexes- monosynaptic, polysynaptic, superficial, deep & withdrawal reflex Sense organ, receptors, electrical & chemical events in	10 hours

	receptors Sensory pathways for touch, temperature, pain, proprioception & others Control of tone & posture: Integration at spinal, brain stem, cerebellar, basal ganglion levels, along with their functions Motor mechanism: motor cortex, motor pathway:the descending tractspyramidal& extra pyramidal tracts-origin, course, termination &functions.Upper motor neuron and lower motor neuron paralysis. Spinal cord lesions- complete transection &hemisection of the spinal cord Autonomic nervous system :features and actions of parasympathetic & sympathetic nervous system Hypothalamus Higher functions of nervous system Special senses- eye, ear, nose, mouth	
	Total	36 hours

Text Books:

1. Arthur, Guyton,Textbook of Medical Physiology, Mosby. 3rd Edition.
2. Sembulingam.K,Human Physiology- Vol. 1&2 ,MedicalAllied, 7th Edition.

Reference Books:

1.Chaudhari, S.K ,Concise Medical Physiology, New CentralAgency,Calcutta, 4th Edition

2.Tortora&Grabowski,Harper Collins, Principals of Anatomy and Physiology,

Distribution of Credits		
Theory	**Practicum**	**Experiential Learning**
36 hours	24 hours	30 hours

Title of the Paper: Biomechanics I **Course: Major**

Subject Code: PHT242M103 **Course Level: 100**

Scheme of Evaluation: Theory + Practical **Total credits: 3**

L-T-P-C: 2-1-2-3

Course Objective:

The objectives of this course are that the students will be able to understand the mechanical phenomenon of the human body which can be applied to human structure and function allowing analysis of human movement and the musculoskeletal system.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Relate** how biomechanical factors influence motion in standing, walking and in various body movements.	**BT 1**
CO 2	**Demonstrate** an understanding of statics, kinematics and kinetic in human movement	**BT 2**
CO 3	**Develop** an understanding of how changes of movement patterns and technique will influence the load on human tissues during movement.	**BT 3**
CO 4	**Analyze** movement and estimate force and estimate force on human structures during sports and exercise.	**BT 4**

COURSE OUTLINE:

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	i) **Mechanics** - Definition of mechanics and Biomechanics **Motion:** definition, types of motion, plane and axis of motion, factor determining the kind and modification of motion. **Force** - Definition, diagrammatic representation of force, point of application, classification of forces, concurrent, coplanar, and co-linear forces, composition and resolution of forces, angle of pulls of muscle. **Friction** **Gravity** - Definition, line of gravity, Centre of gravity **Equilibrium** - Supporting base, types, and equilibrium in static and dynamic state. **Levers** - Definition, function, classification, and application of levers in physiotherapy & order of levers with example of lever in human body **Pulleys** - system of pulleys, types, and application **Elasticity** - Definition, stress, strain, HOOKE'S Law **Springs** - properties of springs, springs in series and parallel, elastic materials in use.	**10**
II	**Muscular system**: i)Definition, Properties of muscles, ii) Muscular contraction, iii)Structural classification, iv)Action of muscle in moving bone, direction of pull, angle of pull v)Functional classification Coordination of muscular system. **Joint structures and functions:** **i)** Joint design, Structure of Connective Tissue, **ii)** Properties of Connective Tissue, joint function, changes with disease, injury, immobilization, exercise, overuse.	10

II	**Muscle Structure and function:** Introduction of muscles, Elements of muscle structure, muscle tension, its classification and the factors effecting muscle function. **Vertebral column:** Introduction, General structures and function. Structure of the cervical spine and Function of cervical region: kinematics and kinetics. Structure of thoracic region: typical thoracic vertebra, intervertebral disc, articulations and the ligaments along with the Function of the thoracic spine: kinematics and kinetics. Structure of the lumbar region: typical lumbar vertebra, intervertebral disc, articulations, ligaments and fascia and function of Lumbar region: kinematics and kinetics. Structure of the sacral region: sacroiliac articulations, ligaments and symphysis pubis articulation. Functions include kinetics and kinematics. Muscles of vertebral column. **The thorax and Chest wall:** Introduction, General structure and function of rib cage, articulations of the rib cage muscle, Kinematics of the ribs and manubriosternum, muscles associated with the rib cage, accessory muscles of ventilation. **The Temporomandibular Joint**: Introduction, structures of articular surfaces, disk, capsules & ligaments, upper and lower TMJ joints. Function of TMJ joint, and it's relation with cervical spine.	10
III	**The Shoulder Complex:** Introduction, components of the SC, AC, ST, GH joint. the integrated function of shoulder complex: ST and GH contributions. SC and AC contributions, structural functions and muscles function.	10

IV	**The Elbow complex:** Introduction, articulating surfaces of humerus, radius and ulna, structure of joint capsule, ligament and muscles. Function of elbow joint ((humeroulnar and humeroradial articulation), structure of superior and inferior articulations. **The Wrist and Hand Complex:** Introduction, the wrist Complex- the radiocarpal joint structure, midcarpal joint structure, the function of the wrist complex, the hand complex- carpometacarpal joint, metacarpophalangeal joint, interphalangeal joint.	6
	TOTAL	36 hours

Text Book:

1. Norkins &Levengie, Joint Structure and Function- A Comprehensive Analysis –F.ADavis, 6th Edition

2. Norkins& White, Measurement of Joint Motion–Aguideto Goniometry, F. A Davis, 5th Edition

Reference Books:

1.Margareta Nordin & Victor H. Frankel, Basic biomechanics of the musculoskeletal system, 5th Edition
2. Carol A. Oatis, Kinesiology-the mechanics and pathomechanics of human movements, 3rd edition.

Experiential Learning: Visit to gait lab in the premier healthcare institutions.

Title of the Paper: Biomechanics I LAB

Subject Code: PHT242M113

COURSE OUTLINE:

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	Goniometry for cervical, thoracic, and lumber spine movements.	10
II	Goniometry for shoulder complex movements.	5

III	Goniometry for elbow joint movements	5
IV	Goniometry for wrist and hand movements along with proximal and distal-radioulnar joint.	4
	TOTAL	24 hours

Text Book:

1. Norkins &Levengie, Joint Structure and Function- A Comprehensive Analysis –F.ADavis, 6th Edition
2. Norkins& White, Measurement of Joint Motion–A guide to Goniometry, F. A Davis, 5th Edition

Reference Books:

1.Margareta Nordin & Victor H. Frankel, Basic biomechanics of the musculoskeletal system, 5th Edition

2. Carol A. Oatis, Kinesiology-the mechanics and pathomechanics of human movements, 3rd edition.

Experiential Learning: Visit to gait lab in the region.

Distribution of Credits		
Theory	**Practicum**	**Experiential Learning**
36 hours	24 hours	30 hours

Title of the Paper: Biochemistry **Course: SEC -1**

Subject Code: PHT242S101 **Course Level: 100**

Scheme of Evaluation: Theory **Total credits: 3**

L-T-P-C: 3-0-0-3

Course Objectives

After completion of the course the students will be able to learn about biochemical functions and metabolism. Acquire knowledge in biochemistry that is required to be practiced in community and all other levels of healthcare system. Understand various relevant medical investigations which will help to diagnose a pathological condition.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	describe carbohydrate, fat and protein metabolism, classification, digestion, absorption, regulation, and clinical application.	**BT 1**
CO 2	define bio-enzymes, classify, factors affecting enzyme action and therapeutic uses.	**BT 2**
CO 3	discuss normal levels in body fluids required for functioning and their abnormal levels to understand the disease process.	**BT 3**
CO 4	demonstrate knowledge related to biochemical mechanisms of muscle contraction and biochemistry of connective tissue and apply these in treating various pathological conditions.	**BT 3**

COURSE OUTLINE:

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	Introduction to Biochemistry: A historical perspective. Amino acids & Proteins: Structure & Function. Structure and properties of Amino acids, Types of proteins and their classification, Forces stabilizing protein structure and shape. Different Level of structural organization of proteins, Protein Purification. Denaturation and renaturation of proteins. Fibrous and globular proteins. Carbohydrates: Structure,	**10**

	Function and properties of Monosaccharides, Disaccharides and Polysaccharides. Homo & Hetero Polysaccharides, Mucopolysaccharides, Bacterial cell wall polysaccharides, Glycoprotein's, and their biological functions.	
II	Lipids: Structure and functions –Classification, nomenclature and properties of fatty acids, essential fatty acids. Phospholipids, sphingolipids, glycolipids, cerebrosides, gangliosides, Prostaglandins, Cholesterol. Nucleic acids: Structure and functions: Physical & chemical properties of Nucleic acids, Nucleosides & Nucleotides, purines &pyrimidines, biologically important nucleotides, Double helical model of DNA structure and forces responsible for A, B & Z – DNA, denaturation and re maturation of DNA.	**20**
III	Enzymes: Nomenclature and classification of Enzymes, Holoenzyme, apoenzyme, Cofactors, coenzyme, prosthetic groups, metalloenzymes, monomeric &oligomeric enzymes, activation energy and transition state, enzyme activity, specific activity, common features of active sites, enzyme specificity: types & theories, Biocatalysts from extreme thermophilic and hyperthermophilicarchaea and bacteria. Role of: NAD+, NADP+, FMN/FAD, coenzymes A, Thiamine pyrophosphate, Pyridoxal phosphate, lipoic-acid, Biotin vitamin B12, Tetrahydrofolate and metallic ions	**10**
IV	Carbohydrates Metabolism: Reactions, energetics, and regulation. Glycolysis: Fate of pyruvate under aerobic and anaerobic conditions. Pentose phosphate pathway and its significance, Gluconeogenesis, Glycogenolysis and glycogen synthesis. TCA cycle, Electron Transport Chain, Oxidative phosphorylation. ß-oxidation of fatty acids.	**10**
TOTAL		**50**

Textbooks:

1. Chatterjee M.N, Textbook of Biochemistry –Jaypee Brothers, 8th edition.
2. Vasudevan D.M, Textbook of Biochemistry for medical students -Jaypee Brothers, 8th edition.

Reference Books:

1.Marshall &Bangert, Clinical Biochemistry – Metabolic & Clinical aspects – Churchill Livingstone, 3rd edition.

2.Southland V.A, Biochemistry – Churchill Livingstone, 5th edition.

Distribution of Credits		
Theory	**Practicum**	**Experiential Learning**
36 hours	-	-

Semester II

Title of the Paper: Human Anatomy-II (T & L) **Course: Major**

Subject Code: PHT242M201 **Course Level: 100**

Scheme of Evaluation: Theory & Practical **Total credits: 3**

L-T-P-C: 2-1-2-3

Course Objectives

The objectives of the course is to introduce students regarding Anatomy of various structures, histological appearance of various organs of the human body. Understanding Digestive, cardiovascular system & Genito- Urinary and outline of Endocrine system.

Course Outcomes

On successful completion of the course the students will be able to:		
Sl No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Explain** – Identify & describe the origin/insertion, nerve /blood supply, root value & function of various skeletal muscles (including lower extremity and spine) , course of peripheral nerves	**BT 1**
CO 2	**Understand** the various surface land-marks, apply related radiological and living anatomy.	**BT 2**
CO 3	**Demonstrate** the bones, joints, soft tissues, muscles related to musculoskeletal system of spine & lower extremities. (including lower extremity and spine) , course of peripheral nerves	**BT 3**
CO 4	**Analyze** the movements of lower extremity joints	**BT 3**

COURSE OUTLINE:

Modules	**Topics (if applicable) & Course Contents**	**Periods**
I.	**Cardiovascular system:** Circulatory system – major arteries and veins of the body, structure of blood vessels Heart structure, positions, chambers, valves, internal & external features Blood supply to heart Conductive system of heart Lymphatic system Circulation, structure & functions Lymph nodes	**10**
II	**Respiratory system:** Structure of upper and lower respiratory tract Thorax:	**10**

	Pleural cavities & pleura Lungs and respiratory tree Heart and great vessels Diaphragm	
III	**Digestive system** Parts of digestive system Abdominal cavity – divisions Muscles of abdominal wall Liver Pancreas Spleen Alimentary canal Gall bladder Intestine (small & large) **Musculoskeletal system:** Introduction to lower limb, Bones and Joints of Lower limb, Front, Medial side and back of thigh, Popliteal fossa, gluteal region, Front of Leg, back of leg Medial and lateral sides of leg, Dorsum of foot, Arches of foot, Nerve supply, blood supply and lymphatic drainage of lower limb.	**10**
IV	**Urinary and Reproductive system:** Urinary system Pelvic floor, innervations Kidney, Ureter, bladder, urethra Genital system – male and female o Reproductive system of male o Reproductive system of female Endocrine system: Pituitary gland Thyroid Parathyroid	**6**
TOTAL		36 hours

Title of the Paper: Human Anatomy-II Lab

Subject Code: PHT242M211

Course Outline:

Modules	Topics (if applicable) & Course Contents	Periods
I.	Introduction to thorax and lower limb bones	**5**
II	Demonstration of skeleton- articulated and disarticulated bones of thorax and lower limb.	**10**
III	Introduction to muscles, joints, movements, nerve supply and arteries of upper and lower limbs.	**5**
IV	. Surface anatomy of lower limb: -surface land mark-bony, muscular and ligamentous. -surface anatomy of major nerves, arteries of the limbs. Points of palpation of nerves and arteries.	**4**
T**OTAL**		**24**

Text Book:
BD Chaurasia's Human Anatomy,Ninth Edition, volume 1, 2.
Alison,G. Anne,W.(2014).Anatomy and Physiology in Health and Illness. 4th edition

Reference Books:
Low & Reed, Basic Biomechanics explained –Butterworth Heinmann, 4th Edition.

EXPERIENRIAL LEARNING: Involves engaging students in hands-on, immersive activities to make anatomical concepts memorable like Virtual and Augmented Reality, Body painting, peer teaching, museum or field visits

Distribution of Credits		
Theory	**Practicum**	**Experiential Learning**
36 hours	24 hours	30 hours

Title of the Paper: Human Physiology- II (Theory + Lab) **Course Level: 100**

Subject Code: PHT242M202

L-T-P-C: 2-1-2-3 **Total credit: 3**

Scheme of evaluation: Theory & Practical

Course Objectives

The objective of the course is to demonstrate and understand human physiology dealing with digestive system, respiratory system, Endocrinology ,reproductive system,renal system of the body. Alteration of normal physiology in terms of different diseases.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**define** different tissues & organs of different systems of human body.	**BT 1**
CO 2	**relate** how abnormal Physiology affects human function and dysfunction of the human body.	**BT 2**
CO 3	**identify** various structural and functional importance of digestive , respiratory,endocrine,reproductive and renal system .	**BT 2**
CO 4	**examination** of normal human physiology with special emphasis on the functioning of the digestive system,respiratory system,endocrine system,reproductive system and renal system.	**BT 3**

Course Outline::

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	**Digestive System** Digestion & absorption of nutrients Gastrointestinal secretions & their regulation Functions of Liver & Stomach. **Respiratory System**: Functional anatomy of respiratory tract, muscles of respiration, mechanism of inspiration and	10

	expiration,intrapulmonary and intra pleural pressure changes during various phases of respiration,Lung volumes and capacities, Ventilation, Gas exchange,Transport of gases ,Regulation of respiration, Applied aspects include hypoxia, cyanosis, apnea ,dyspnea	
II	**Endocrinology** Physiology of the endocrine glands – Pituitary, Pineal Body, Thyroid, Parathyroid, Adrenal, Gonads, Thymus, Pancreas. Hormones secreted by these glands, their classifications and functions.	10 hours
III	**Male & female reproductive system** Male - Functions of testes, pubertal changes in males, testosterone - action & regulations of secretion. Female - Functions of ovaries and uterus, pubertal changes, menstrual cycle, estrogens and progestron - action and regulation.	10 hours
IV	**Renal System** Physiology of kidney and urine formation Glomerular filtration rate, clearance, Tubular function Water excretion, concentration of urine-regulation of Na+, Cl-, K+ excretion Physiology of urinary bladder	6 hours

Text Books:

1. Arthur, Guyton, Textbook of Medical Physiology, Mosby.2nd Edition
2. Sembulingam.K, Human Physiology- Vol. 1&2 ,MedicalAllied, 7th Edition

Reference Books:

1.Chaudhari, S.K ,Concise Medical Physiology, New CentralAgency,Calcutta, 1st Edition

2.Tortora&Grabowski,Harper Collins, Principals of Anatomy and Physiology, Global Edition.

Title of the Paper: Human Physiology- I LAB

Subject Code: PHT242M112

Course Objectives

The objective of this course is to learn about the various lung volumes in normal and alternative physiology of human body. Learn about the various blood components haemoglobin , RBC, WBC, ESR, Blood grouping.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Learn** to apply appropriate safety and ethical standards	**BT 1**
CO 2	**Identify** and locate the anatomical structures	**BT 2**
CO 3	**Demonstrate** the steps involved in the methods.	**BT 3**
CO 4	**Apply** the knowledge and methods in regular life.	**BT 4**

Course Outline:

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	1. Spirometery to measure various lung capacities & volumes, Respiratory rate, Tidal volume, IRV, IC, ERV, EC, residual volume on Spirometery.	10
II	Estimate of Haemoglobin, R.B.C., W.B.C., TLC, DLC, ESR count.	5
III	Blood indices, Bleeding& Clotting time	5
IV	Blood grouping.	4

Text Book:

1. Alison,G.Anne,W.(2014). Ross and Wilson Anatomy and Physiology in Health and Illness. Elsevier Health; UK, 4th edition
2. Arthur, Guyton, Textbook of Medical Physiology, Mosby.2ndEdition.

Reference Books:

1. Sembulingam.K, Human Physiology- Vol. 1&2 ,MedicalAllied, 7th Edition.

Distribution of Credits		
Theory	**Practicum**	**Experiential Learning**
36 hours	24 hours	30 hours

Title of the paper: Biomechanics II (T & L) **Course: Major**

Subject Code: **PHT242M203** **Course Level: 100**

Scheme of Evaluation: Theory + Practical **Total credits: 3**

L-T-P-C: **2-1-2-3**

Course Objective:

The objectives of this course is to provide the students an overview of the major challenges in movement biomechanics, the functions of the various structures and learn about the forces involved in the movement.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Explain** the biological, mechanical, and neurological mechanism by which muscles produce movement.	**BT 2**
CO 2	**Identify** general and specific features of the hip, knee, and ankle complex.	**BT 3**

CO 3	**Analyze** the pathological basis of injury and aging of the hip, knee and ankle complex.	**BT 4**
CO 4	**Analyse** different postural malalignment like scoliosis, kyphosis, lordosis and fixed flexion deformity, about the variation between different pathological gait patterns.	**BT 4**

COURSE OUTLINE :

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	**The Hip Complex:** Structure of the hip joint, function of the hip joint, hip joint forces and muscle function in stance, Hip joint Pathology.	10 hours
II	**The Knee:** Structure of tibiofemoral joint, tibiofemoral joint function, patellofemoral joint.	6 hours
III	**The ankle and Foot complex:** Ankle joint, the sub-talar joint, transverse tarsal joint, tarsometatarsal joint, metatarsophalangeal joint, Planatr arches.	10 hours
IV	**Posture** – dynamic and static posture, kinetic and kinematics of posture, analysis of posture, effect of age, pregnancy, occupation on posture. **Gait** – kinematics and kinetics of gait, gait in running and stair climbing.	10 hours
	Total	36 Hours

Text Book:

1.Norkins & Levengie, Joint Structure and Function- A Comprehensive Analysis –F.ADavis, 6th Edition

2.Norkins & White, Measurement of Joint Motion–A guide to Goniometry, F. A Davis, 5th Edition

Reference Books:

1.Margareta Nordin & Victor H. Frankel, Basic biomechanics of the musculoskeletal system, 5th Edition

2. Carol A. Oatis, Kinesiology-the mechanics and pathomechanics of human movements, 3rd edition.

Title of the Paper: Biomechanics-II LAB

Subject Code: PHT242M213

COURSE OUTLINE:

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	Goniometry – measurement of joint ROM Hip joint	10
II	Goniometry for knee joint movements	5
III	Goniometry for Ankle Joint movements	5
IV	Normal and Abnormal posture, Parameters of gait, Abnormal gait	4
	TOTAL	24 hours

Text Book:

1. Norkins &Levengie, Joint Structure and Function- A Comprehensive Analysis –F.ADavis, 6th Edition
2. Norkins& White, Measurement of Joint Motion–A guide to Goniometry, F. A Davis, 5th Edition

Reference Books:

1.Margareta Nordin & Victor H. Frankel, Basic biomechanics of the musculoskeletal system, 5th Edition
2. Carol A. Oatis, Kinesiology-the mechanics and pathomechanics of human movements, 3rd edition.

Experiential Learning: Visit to gait lab in the region.

Distribution of Credits		
Theory	**Practicum**	**Experiential Learning**
48 hours	30 hours	12 hours

Title of the Paper: Psychology & Sociology **Course: Major**

Subject Code: **PHT242S201** **Course Level: 100**

Scheme of Evaluation: Theory **Total credits: 3**

L-T-P-C: **3-0-0-3**

Course Objectives

- The objective of the course is to introduce students to the Psychology and study of various behavioural patterns of individual.
- Students will able to learn about the communication and interaction skills appropriate to various age groups
- The objectives of the course is to introduce students about Sociology which will help them to work in society
- Will know more about different cultures in the society

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	relate the concepts of the term Psychology & its importance in health delivery system, explain psychological maturation during development & psychological alterations during aging. Relate to the different culture in the society	**BT 1**
CO 2	explain the importance of psychological status of the person in health & disease and emotional status of a patients. Understanding social factors affecting health, influence of family, culture, community on health perspectives	**BT 2**
CO 3	Apply skills for good interpersonal communication with the patient and the family member. Apply skills for good interpersonal communication with the patient and with the society	**BT 3**
CO 4	Analyze various psychiatric disorders, Identifying intelligence (IQ)among the patients.	

	Analyze stress and its relation with the health ,and also with the community	**BT 4**

COURSE OUTLINE:

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	• Introduction to Psychology, Fields of application of Psychology, influence of heredity and environment on the individual. • Learning – theories and principles of learning, Learning disabilities. • Memory – types, theories of memory and forgetting, methods to improve memory ✓ Introduction: Definitions of sociology, sociology as a science of society, uses of the study of sociology, application of knowledge of sociology in physiotherapy and occupational therapy. ✓ Sociology & Health: Social factors affecting health status, social consciousness and perception of illness, social consciousness and meaning of illness, decision making in taking treatment. Institutions of health, their role in the improvement of the health of the people. ✓ Socialization: Meaning of Socialization, influence of social factor on personality, Socialization in hospitals, Socialization in the rehabilitation of patients	20 hours
2	• Thinking – process of thinking, problem solving, decision making and creative thinking. • Motivation - theories and types of Motivation. • Emotions - theories of emotions and stress, Emotional and behavioural disorders of childhood and adolescence, Disorders of under and over controlled behaviour, • Eating disorders. • Attitudes – theories, attitudes and behaviour, factors in attitude change. ✓ Social groups: Concept of social groups, influence of formal and informal groups on health and sickness, the role of primary groups and secondary groups in hospitals and rehabilitation setting. ✓ Family: Influence of family on human personality, discussion of changes in functions of a family, influence of family on individual's health, family and nutrition, the effects of sickness on family and psychosomatic disease.	20 hours

	✓ Community: Concept of community, role of rural and urban communities in public health, role of community in determining belief's , practice and home remedies in treatment.	
3	• Intelligence - theories of intelligence, I.Q., general intelligence and special intelligence, intelligence tests and their uses. • Personality, theories of personality, factors influencing personality, Personality Disorders. • Conflict and frustration - Common defensive mechanism : Identification, regression, repression, projection, sublimation and rationalization. ✓ Culture: Components of culture. Impact of culture on human behaviour, cultural meaning of sickness, response & choice of treatment (role of culture as social consciousness in moulding the perception of reality),and culture induced symptoms and disease, sub- culture of medical workers. ✓ Cast system: Features of modern caste system and its trends. ✓ Social change: Meaning of social change, factors of social change, human adaption and social change, social change and stress, social change and deviation, social change and health programmes, the role of social planning in improvement of health and in rehabilitation	20 hours
4	• Attention and Perception : Nature of attention, factors determining attention, nature of perception, principle of perceptual grouping; Illusions and Hallucination. • Counselling - Aims and principles. • Development and growth of behaviour in infancy and childhood, adolescence, adulthood and old age, normal and abnormal. • Psychotherapy – introduction to paradigms in psychopathology and therapy. • Mental deficiency -a) Mental retardation, b) Autistic behaviour) Learning disabilities. ✓ Social problems of the disabled : Population explosion Poverty and beggary Un employment	40 hours

	Juvenile delinquency Prostitution Alcoholism Problems of women in employment Geriatric problems Problems of under Preveledged ✓ Social security: Social security and social legislation in relation to disabled ✓ Social worker: The role of medical social worker	
	Total	36 hours

Text Book: (psychology)

2. Weld A.V, Foundation of Psychology, CBS Publishing House, 4th edition.
3. Kolkar A, Introduction to social Psychology, Oxford Publishing House, 5th Edition.
4. Porter & Alder, Psychology and Sociology- Applied to Medicine-W.B Saunders, 5th Edition.

Text Book: (sociology)

1. Magee D.J, Sociology- Drydon Press, Illinois, 4th Edition.
2. Kupaswamy, Social changes in India- Vikas Publications, Delhi, 3rd Edition.
3. Ahuja K.D, Social Problems –Bookhive, Delhi, 2nd Edition.

Ginnsberg P, Principles of sociology – Sterling Publications, 7th Edition.

Title of the Paper: Electrotherapy-I **Course: Major**

Subject Code: PHT242M301 **Course Level: 200**

Scheme of Evaluation: Theory + Practical **Total credits: 4**

L-T-P-C: 3-1-2-4

Course Objective:

The course objective is that after completion of this course the students will be able to understand the basic aspects of electrotherapy, low frequency current & radiation therapy & utilize contemporary & recent methods to select the most appropriate method to alleviate pain for patients.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Define** the basics of electricity and its physiological & therapeutic effects gained	**BT 1**
CO 2	**Illustrate** about pain and pain modulation mechanism & **examine** neuromuscular dysfunctions by using electro-diagnostic test.	**BT 2**
CO 3	**Apply** the construction, biophysical principles and effects, dangers, safety measures, judicial use, appropriate methods of application, contraindications of the various low frequency equipment & radiation therapy units.	**BT 3**
CO 4	**Examine** the principles and techniques of different electrotherapy modalities in the restoration of physical function in conditions like nerve injuries.	**BT 4**

COURSE OUTLINE:

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	**Physical Principles** 1. Structure and properties of matter – solids, liquids and gases, adhesion, surface tension, viscosity, density, and elasticity. 2. Structure of atoms, molecules, elements, and compounds. Election theory, static and current electricity 3. Conductors, Insulators, Potential Difference, Resistance &Intensity Ohm's Law – Its application to AC &DC currents a) Rectifying Devices–Thermionic valves, Semiconductors, b) Transistors, Amplifiers, Transducers Oscillator circuits c) Capacitance, condensers in DC and AC circuit d) Display devices & indicators – analogue & digital **Effects of Current Electricity:** 1. Chemical effects- Ions and electrolytes, Ionization, Production of an E.M.F by chemical action. 2. Magnetic effects, Molecular theory of magnetism, Magnetic fields, Electromagnetic Induction. 3. Milli ammeter and Voltmeter, Transformers, and choke coil Thermal Effects – Joule's Law and Heat production 5. Physical Principals of light and its properties 6. Electromagnetic spectrum – biophysical application **Electrical supply:** a) Brief outline of main supply of electric current b) Dangers –short circuits, electric shocks c) Precautions – safety devices, earthing, fuses etc. d) First aid & initial management of electric shock **Principles of Application**	10
II	**Low Frequency Currents** a. Introduction to direct, alternating &modified currents. b. Production of direct current –Physiological and therapeutic effects of constant current anodal and cathodal Galvanism, Ionization, and their application in various conditions. c. Iontophoresis – Principles of clinical application, indication, contraindication, precaution, operational skills of equipment & patient preparation. d. Modified direct current – various pulses, duration and frequency and their effect on Nerve and Muscle tissue. Production of interrupted and surged current and their effects. e. Modified direct current- Physiological and therapeutic effects, principles of clinical application, indications, contra indications, precautions, operational skills of equipment& patient preparation. 6. Transcutaneous Electrical Nerve Stimulations (TENS): - a. Types of Low Frequency pulse widths, frequency & intensities used as TENS applications.	10

MODULE	TOPICS & COURSE CONTENT	PERIODS
	b. Theories of pain relief by TENS c. Principle of clinical application, effects & users, indicators, contraindications, precautions, operational skills of equipment and patient preparation.	
III	**Electrical Reactions and Electro-diagnostic tests:** 1. Electrical Stimuli and normal behavior of Nerve and muscle tissue. Types of lesions and development of reaction of degeneration Faradic- Intermittent direct current test, Faradic foot bath 2. S.D Curve and its application Chronaxie, Rheobase &pulse ratio	10
IV	**Radiation Therapy:** a. Infra- red rays- Wavelength, frequency, types & sources of IRR generation, techniques of irradiation, physiological & therapeutic effects, indications, contraindications, precautions, operational skills of equipment & patient preparation. b. Ultra- violet rays (UVR): Wavelength, frequency, types & sources of UVR generation, techniques of irradiation, physiological & therapeutic effects, indications. Contraindications, precautions, operational skills of equipment & patient preparation. Dosimetry of UVR.	8
TOTAL		**48 hours**

Textbooks:

1. Electrotherapy Explained: Principles &Practice – Low & Reed – Butterworth Heinemann.
2. Clayton's Electrotherapy, (9*t*h ed.) Forster & Palastanga Bailliere Tindall.

Reference Books:

1. Jagmohan Singh, Electrotherapy, Jaypee Brothers, 2nd Ed, 2012.
2. Basant Kumar Nanda, Electrotherapy explained, Jaypee Brothers, 1st Ed, 2006.

Subject: Electrotherapy Lab I

Subject Code: **PHT242M311**

Course Outline:

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	1. To experience sensory and motor stimulation of nerves and muscles by various types of low frequency currents on self. 2. To locate and stimulate different motor points region wise including the upper and lower limb, trunk & face.	10 hours
II	3. Therapeutic application of different low frequency currents, Faradic foot bath, Faradism under pressure, Iontophoresis. 4. To study TENS stimulations, its operation and application – region wise	5 hours
III	5. To study the reactions of degeneration of nerves to plot strength duration curves. 6. To find chronaxie and Rheobase.	4 hours
IV	7. To study the different types of Ultraviolet units, their operation, assessment of test dose and application of UVR- region wise. 8. To study the various types of Infrared lamps and their application to body region wise.	5 hours
	TOTAL	**24 hours**

Textbooks:

1.Electrotherapy Explained: Principles &Practice – Low & Reed – Butterworth Heinemann.

2.Clayton's Electrotherapy, (9*t*h ed.) Forster & Palastanga Bailliere Tindall.

Reference Books:

1. Jagmohan Singh, Electrotherapy, Jaypee Brothers, 2nd Ed, 2012.

2. Basant Kumar Nanda, Electrotherapy explained, Jaypee Brothers, 1st Ed, 2006.

Experiential Learning: Field visits to institutions & diagnostic centres for orientation to electrodiagnostic tests.

Distribution of Credits		
Theory	**Practicum**	**Experiential Learning**
48 hours	24 hours	18 hours

Title of the Paper: Exercise Therapy-I (T & L) **Course: Major**

Subject Code: PHT242M302 **Course Level: 200**

Total credits: 4

L-T-P-C: **3-1-2-4**

Course Objectives:

The objective of the course is after student will be able to apply the different types of exercises in different conditions considering the indications and contraindications of the procedure and describe the effects of the techniques.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Understand** the fundamentals of muscle and joint function and describe the use of various equipment's and techniques.	**BT 2**
CO 2	**Demonstrate** how to grade the strength of muscle and how to measure the joint range of motion.	**BT 3**
CO 3	**Demonstrate** the technique of different types of movements, massage therapy muscle training and fitness training concepts.	**BT 3**
CO 4	**Analyse** the problem of the patient and plan the treatment required based on problem of the patient.	**BT 4**

COURSE OUTLINE:

Modules	Course Content	Periods
I.	1. Introduction to Exercise therapy, Principles, techniques and general areas of its application, Assessment & its importance. 2. Description of Fundamental starting positions and derives position including joint positions, muscle work, stability, effects and uses. 3. Introduction to Movements including analysis of joint motion, muscle work and Neuro muscular co-ordination. 4. Classification of movements – Describe the types, technique of application, indications, contraindication, effects and uses of the following: a) Active movement b) Passive movement c) Active assisted movement d) Resisted movement 5. To study the principles, techniques of application indication, Contraindication, precaution, effects and uses of Suspension Therapy.	10
II.	1.Manual muscle testing a) Principles and application techniques of Manual muscle testing. b) Testing position, procedure and grading of muscles of the upper limb, lower limb and trunk. 2.Goniometery a) Principles, techniques and application of Goniometer. b) Testing position, procedure and measurement of R.O.M of the joints of upper limbs, lower limbs and trunk.	10
III.	Motor Learning 1. Introduction to motor learning a) Classification of motor skills b) Measurement of motor performance. ii)Introduction to motor control a) Theories of motor control b) Applications	10

IV.	1.Soft tissue manipulation(massage) a) History, various types of soft tissue manipulation b) Physiological effects of soft tissue manipulation on various systems 2.Relaxation and Therapeutic Gymnasium a) Describe relaxation, muscle fatigue, muscle spasm and tension. b) Techniques of relaxation (local and general) c) Effects, Uses and clinical application d) Indication and Contraindication 3.Therapeutic Gymnasium a) Setup of a gymnasium and its importance b) Various equipment's in the gymnasium c) Effects and uses of each equipment.	6
TOTAL		36 hours

Text Book:

1. Therapeutic Exercises Foundation and Techniques – Kisner and Colby-F.A Davis.
2. Principle of Exercise Therapy- Gardiner – C.B.S Delhi.

Reference Books:

1. Practical Exercise Therapy Hollis- Blacwell Scientific Publications.
2. Therapeutic Exercise – Basmajian- Williams and Wilkins.

Subject: Exercise therapy I Lab

Subject Code: PHT242C312

COURSE OUTLINE:

Modules	Course Content	Periods
I.	1. To practice the measurement of ROM of joints – upper limb, lower limb & trunk 2. To practice the grading of muscle strength region wise –upper limb, lower limb and trunk.	5
II	3. Different massage techniques- upper and lower limb. To study the different types of muscle contraction, muscle work, group action of muscles and co-ordinated movements. 4. To practice the various types of suspension therapy and its application on various parts of body-region wise	**10**
III	5. To study the position of joints, muscle work, and stability of various fundamental and derived positions. 6. To study & practice local & general relaxation techniques. 7. To study the structure & function along with application of various equipment in a gymnasium	**5**
IV	7. To study the structure & function along with application of various equipment in a gymnasium	**4**
	TOTAL	**24 hours**

Text Book:

1. Therapeutic Exercise by Carolyn Kisner
2. Principles of Exercise therapy – Dena M. Gardiner

Reference Books:

1.Therapeutic exercise by Basmijjan& Wolf.

2. Muscle testing by Daniel Kendall

Experiential Learning: Visit to any rehabilitation center for practical exposure of exercise therapy on patients.

Distribution of Credits		
Theory	**Practicum**	**Experiential Learning**
48 hours	24 hours	18 hours

Title of the Paper: Pathology & Microbiology-I **Course: Major**

Subject Code: PHT242M303 **Course Level: 200**

Scheme of Evaluation: Theory **Total credits: 4**

L-T-P-C: 4-0-0-4

Course Objective:

The objectives of the course are to introduce students to Pathology which 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.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Learn** the microbiology of various conditions, diseases and disorders and changes in structure and function of cells during disease condition gained.	**BT 1**
CO 2	**Understand** how to protect themselves and their patients from infections during their interactions and the cell injury & response of different tissues and organs	**BT 2**
CO 3	**Explain** morphology, mode of infection, multiplication of medically important viruses & their treatment.	**BT 2**

CO 4	**Demonstrate** the microbiology of common diseases that therapists would encounter in their daily practice and also the pathology of common diseases that therapists would encounter in their daily practice.	**BT 3**

COURSE OUTLINE:

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	1. **Introduction**: Concepts of diseases, classification of lesions 2. **Bacterial, viral and parasitic infections** – a general outline. 3.**Cell injury:** Reversible cell injury-types, sequential changes, cellular swellings, vacualation, hyaline changes, mucoid changes. Irreversible cell injury-types of necrosis and gangrene, Autolysis. **Pathology: Bone and Joints**: Autoimmune diseases, septic arthritis, Osteomyelitis, osteomalacia, Gout, Rickets • **Skin**- melanin pigment disorder, vitiligo, Alopecia, skin biopsy, leprosy, SLE, Scleroderma and Psoriasis • **Central nervous system**: CNS infections, vascular disorders **Respiratory system:** COPD, pneumonia, pleuritis, lung collapse-atelectasis	15
II	**Inflammation and repair**- Acute inflammation-features, causes, vascular and cellular events, inflammatory cells and mediators Chronic inflammation-causes, types, classification, nonspecific and granulomatous with examples. Repair, wound healing by primary and secondary union, factors promoting and delaying the process. Healing in specific site including bone healing. Haemorrhage, shock-pathogenesis, types, morphologic changes embolism and thrombosis- formation, fate and effects. • **Haematology**- bleeding and coagulation disorder, lymphoid and	15

	myeloid neoplasms • **Hepatic diseases**- Cirrhosis-emphasis to systemic effects of portal Hypertension. • **Cardiovascular system**: Atherosclerosis-Ischemic heart disease-myocardial, Congenital Heart Disease, Infarction—pathogenesis/pathology, Hypertension, peripheral vascular disease.	
III	**Introduction and history of microbiology** 1. Micro-organisms a) Classification b) Shape and arrangement c) Special characteristics –spores, capsules, enzymes, motility, reproduction • **Pathology:** Immunology – definition, classification • Immunity-natural and acquired • Allergy and hypersensitivity – types & examples. Antigen-antibody reaction	10
IV	**Disinfection and antiseptics –** • Definition • Types • Use in various aspects **Sterilization and asepsis** - • Definition • Uses • Types **Pathology:** Outline of common pathogenic bacteria and diseases produced by them: Treatment and prevention of:	10

	A) Enteric Infections B) Anaerobic infections C) Urinary tract infections D) Leprosy, tuberculosis and miscellaneous infections E) Wound infections F) Sexually transmitted diseases G) Hospital acquired infections • Pathogenic yeast's and fungi – types, clinical features, management with antifungal agents. • Virology– definition, structure of virus, routes of virus. Virus infections with special mention of Hepatitis, Poliomyelitis & Rabies.	
	TOTAL	50 hours

Textbooks:

1) Essential of Medical Microbiology – Bhatia & Lal – Jaypee Brothers.

2) Medical Microbiology –Mims –Jaypee Brothers

Reference Books:

1. Microbiology: An introduction for the Health Sciences – Ackerman and Richards – W.B. Saunders Co.
2. Pathology: Implications for Physical Therapists – Goodmann and Boissonnault – W.B

Subject: Pharmacology **Course Level: 200**

Course: SEC **Total credits: 3**

Subject Code: **PHT242S301**

L-T-P-C: **3-0-0-3**

Scheme of evaluation: Theory

Course Objective:

The objectives of the course are to introduce students about basic pharmacology of common drugs used, their importance in the overall treatment. After completion of the course the students will be able to understand the general principle of drug action, the effects and adverse effects of drugs.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Explain** the pharmacological effects of commonly used drugs by patients referred for Physiotherapy	**BT 2**
CO 2	**Identify** formulation& route of administration	**BT 3**
CO 3	**Develop** knowledge about adverse reactions, precautions to be taken & contraindications for conditions.	**BT 3**
CO 4	**Analyze** utilization of drugs.	**BT 4**

COURSE OUTLINE :

MODULE	**TOPICS & COURSE CONTENT**	**PERIODS**
I	1. Introduction, definition and nomenclature of drugs, classification, sources. 2. General action of drug, metabolism and excreation of drugs. 3. Factors modifying drug response and its adverse effect. 4.Drug allergy and idiosyncrasy 5. Drug toxicity	10 hours

	6. Metabolic rate of drug	
II	7. Methods of administration 8. Chemical character of drugs. 9. Drugs acting on Central nervous system- anaesthetics, alcohols, alkaloids, narcotics, antipyretics, hypnotics, sedatives, anticonvulsants, stimulants, psychotherapeutics	10 hours
III	10. Drugs acting on peripheral nervous system – stimulating and inhibiting cholinergic and anticholinergic activity 11. Drugs acting on Neuromuscular junction and muscles: sedative, antianxiety drugs, drugs used in mood disorders, spasticity and skeletal muscle relaxants. 12. Drugs acting on cardiovascular system. 13. Drugs acting on respiratory system	10 hours
IV	14. Chemotherapeutic agents 15. Hormones 16. Drugs affecting endocrine functions 17. Vitamins	6 hours
	Total	36 Hours

Text Book:

1. K.D. Tripathy, 'Essentials of Medical Pharmacology'

2. R.S. Satoskar,'Pharmacology and Pharmaco therapeutics'

Title of the Paper: Electrotherapy-II **Course: Major**

Subject Code: **PHT242M401** **Course Level: 200**

Scheme of Evaluation: Theory + Practical **Total credits: 4**

L-T-P-C: **3-1-2-4**

Course Objective:

The course objective is that after completion of this course the students will understand the basic aspects of medium & high frequency currents, thermotherapy, cryotherapy & electrodiagnosis & utilize contemporary & recent methods to select the most appropriate method to alleviate pain for patients.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Explain** the biophysical & bio physiological changes which occur with thermotherapy & cryotherapy	**BT 2**
CO 2	**Identify** the construction, Biophysical principles and effects, dangers, safety measures, judicial use, appropriate methods of application, contraindications of the various medium, high frequency equipment & LASER therapy.	**BT 3**
CO 3	**Analyze** the proper clinical applications for hot packs, paraffin bath, fluid therapy, whirlpool, contrast bath & cryotherapy	**BT 4**
CO 4	**Select** the commonly used electro diagnostic tests like Electromyograph, nerve conduction study in relevant conditions	**BT 5**

COURSE OUTLINE:

MODULE	**TOPICS & COURSE CONTENT**	**PERIODS**
I	1. Review of Neuro- muscular Physiology including effects of electrical stimulation. 2. Physiological responses to heat gain or loss on varioustissues of the body. 3. Therapeutic effects of heat, cold and electrical currents. 4. Physics of sound including characteristics and propagation	10

II	1.**Medium frequency currents** (Interferential Therapy, Russian & Rebox currents) – conceptual framework of medium frequency current therapy, production, biophysical effects, types of therapeutics effects, Techniques of application, indications, Contraindications, Precautions, operational skills, and patient preparation. **2.High frequency currents** a. S.W.D and M.W.D – Production, biophysical effects, types, Therapeutic effects, techniques of application, indications, contraindications, precautions, operational skills, and patient preparation b. High frequency sound waves (Ultrasound) – Production, biophysical effects, types, therapeutic effects, Techniques of application, indications, contraindications, precautions, operational skills, and patient preparation	10
III	1.**Superficial heat-** Paraffin wax bath, moist heat, electrical heating pads a. Mechanism of production b. Mode of heat transfer c. Physiological & therapeutic effects d. Indications, contraindications, precautions, operational skills of equipment & patient preparation 2**. Cryotherapy**: Definition, Principle- Latent heat of fusion, Physiological & Therapeutics effects, Techniques of Applications, Indications & Contraindications, Dangers, and Methods of application with dosage. **3.Contrast bath**: Definition, Principle, Physiological & Therapeutics effects, Techniques of Applications, Indications & Contraindications, Dangers, and Methods of application 4. Fluid therapy: Construction, Method of application, Therapeutic uses, Indications & Contraindications. 5. Whirlpool bath: Methods of application, Therapeutic uses, Indications & Contraindication	10

IV	1. LASER: Define LASER. Types of LASERS. Principles of Production. 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. 2.Electro-Diagnosis – a. Instrumentation, definition & basic techniques of E.M.G and E.N.G b. Bio-Feedback – Instrumentation, principles, Therapeutic effects, indications, contraindications, limitations, precautions, operational skills, and patient preparation	8
	TOTAL	**48 hours**

Textbooks:

1.Electrotherapy Explained: Principles &Practice – Low & Reed – Butterworth Heinemann.

2.Clayton's Electrotherapy, (9*t*h ed.) Forster & Palastanga Bailliere Tindall.

Reference Books:

1. Therapeutic Heat and cold – Lehman- Williams & Wilkins.

2.Jagmohan Singh, Electrotherapy, Jaypee Brothers, 2nd Ed, 2012.

Title of the paper: Electrotherapy Lab II

Subject Code: **PHT242M411**

COURSE OUTLINE:

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	1.To study an Intermittent therapy unit, its operation, and different methods of application- region wise 2. To study a short-wave diathermy unit, its operation, and different methods of application – region wise. 3. To study a Microwave diathermy unit, its operation unit, its	10

	operation, and different methods of application – region wise.	
II	4. To study an Ultrasound unit, its operation, its operation, and different methods of application – region wise. 5. To study a laser unit, its operation, and different methods of application – region wise.	5
III	1.To study various forms of therapeutic cold application region wise including-ice, cold packs, vapour coolant sprays, etc. 2.To study a hydrocollator unit & paraffin wax bath unit, its operations and therapeutic application of Hot packs & paraffin wax-region wise	5
IV	1. To observe various Electro- myography (EMG) procedures. 2. To observe various Electro- neurography (ENG) procedures. 3. To study a Bio feedback unit, its operation, and different methods of application- region wise.	4
	TOTAL	**24 hours**

Textbooks:

1.Electrotherapy Explained: Principles &Practice – Low & Reed – Butterworth Heinemann.

2.Clayton's Electrotherapy, (9*t*h ed.) Forster & Palastanga Bailliere Tindall.

Reference Books:

1. Jagmohan Singh, Electrotherapy, Jaypee Brothers, 2nd Ed, 2012.

2. Basant Kumar Nanda, Electrotherapy explained, Jaypee Brothers, 1st Ed, 2006.

Experiential Learning: Field visit to Electrodiagnostic lab in Medical Institutions.

Distribution of Credits		
Theory	**Practicum**	**Experiential Learning**
48 hours	24 hours	18 hours

Title of the paper: Exercise Therapy II **Course: Major**

Scheme of Evaluation: Theory + Practical **Course Level: 200**

Subject Code: PHT242M402 **Total Credit: 4**

L-T-P-C: **3-1-2-4**

Course Objectives:

The objective of the course is after student will be able to apply the different types of exercises in different conditions considering the indications and contraindications of the procedure and describe the effects of the techniques.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Understand** the fundamentals of use of therapeutic exercise in various conditions.	**BT 2**
CO 2	**Demonstrate** manual therapeutic techniques used in rehabilitation of patients.	**BT 3**
CO 3	**Demonstrate** various specialized techniques used in physiotherapy like PNF, mobilization and manipulation, and group therapy	**BT 3**
CO 4	**Analyse** normal human posture & various normal musculoskeletal movements during Gait, activities of daily living	**BT 4**

COURSE OUTLINE:

Modules	Course Content	Periods
I.	Therapeutic Exercises 1. Principles, classification, techniques, physiological & therapeutic effects, indications & contraindications of therapeutic exercises. 2. Assessment & evaluation of patient (region wise) to plan a therapeutic exercise programme. 3. Joint Mobility – Aetiology of Joint stiffness, general techniques of mobilization , effects, indications, contraindications & precautions. 4. Muscle Insufficiency – Aetiology of muscle insufficiency (strength, tone, power, endurance & volume), general techniques of strengthening, effects, indications, contraindications & precautions. 5. Neuro-muscular Inco-ordination-Review normal neuromuscular coordination, Aetiology of neuromuscular in co-ordination & genetic therapeutic techniques, effects, indications, contraindications & precautions. 6. Functional re-education – General therapeutic techniques to re- educate ADL function.	**10**
II.	Posture, Balance, Gait: 1. Normal Posture – Overview of the mechanism of normal posture. 2. Abnormal Posture – Assessment, Types, Etiogenesis, management including therapeutic exercise. 3. Static and Dynamic Balance – Assessment & management including therapeutic exercises. 4. Gait – Overview of normal gait & its components. 5. Gait deviations – Assessment ,types , etiogenesis, management including therapeutic exercises. 6. Types of walking aids, indications, effects and various training techniques .	**10**
III.	Hydrotherapy 1. Basic Principles of fluid mechanics, as they relate to hydrotherapy 2. Physiological & therapeutic effects of hydrotherapy including joint motility, muscle strengthening & wound care etc. 3. Types of Hydrotherapy equipment, indications, contraindications, operation skills & patient preparation.	**10**
IV.	Special Techniques 1. Introduction to special mobilization & manipulation techniques, effects, indications & contraindications. 2. Conceptual framework, principle of proprioceptive neuromuscular facilitation (PNF) techniques, including indications, therapeutic effects	**8**

	and precautions. 3. Principles of traction, Physiological & therapeutic effects, classification, types, indications, contraindications, techniques of application, operational skills & precautions. 4. Review normal breathing mechanism, types, techniques, indications, contraindications, therapeutic effects & precautions of breathing exercises. 5. Group Therapy – Types, advantages & disadvantages. 6. Exercises for the normal person – Importance and effects of exercise to maintain optimal health & its role in prevention of diseases types, advantages, indications, contraindications & precautions for all age groups. 7. Introduction to Yoga – Conceptual framework, various "asanas", the body- mind relationship, effects & precautions.	
TOTAL		48 hours

Text Book:

1.Therapeutic Exercises Foundation and Techniques – Kisner and Colby-F.A Davis.

2.Principle of Exercise Therapy- Gardiner – C.B.S Delhi.

Reference Books:

1. Practical Exercise Therapy Hollis- Blacwell Scientific Publications.

2. Therapeutic Exercise – Basmajian- Williams

Title of the Paper: Exercise Therapy-II Lab

Subject Code: PHT242M412

COURSE OUTLINE:

Modules	Course Content	Periods
I.	1.Limb length and limb girth measurement . 2. To study & practice the various techniques of mobilization of joints region wise. 3. To study & practice the various techniques of progressive strengthening exercises of muscles region wise.	**5**
II.	4. To study & practice the use of various ambulation aids in gait training. 5. To assess & evaluate ADL's and practice various training techniques 6. To study & practice mat exercises.	**5**
III	7. To assess & evaluate normal & abnormal posture & practice various corrective techniques. 8. To assess & evaluate equilibrium/ balance & practice various techniques to improve balance and coordination exercises . 9. To study the structure & functions of hydrotherapy equipment's& their applications	**5**
IV	10. To study & practice various traction techniques and stretching exercises. 11. To study & practice various group exercise therapies 12. To practice & experience effects of basic yoga "asanas 13. To study plan & practice exercise programmes for normal person of various age groups**.**	**10**
	Total	**25**

Text Book:

1.Progressive resisted exercises – by Margaret Hollis,

2.Therapeutic Exercise by Carolyn Kisner

Reference Books:

1.Therapeutic exercise by Basmijjan& Wolf.

2 Muscle testing by Daniel Kendall.

Distribution of Credits		
Theory	**Practicum**	**Experiential Learning**
48	**25**	**17**

Title of the Paper: GENERAL MEDICINE **Course Level: 200**

Subject Code: PHT242M403

L-T-P-C: 3-0-0-3 **Total credits: 3**

Scheme of Evaluation: Theory

Course Objectives

To introduce students the causes, clinical presentation and treatment of various disease of the human body . The course will also enable students to understand the disease pathology and plan strategies to manage them.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Relate** to the understanding of regarding various diseases affecting the human body,	**BT 1**
CO 2	**Understand** the clinical manifestation and the signs and symptoms	**BT 2**
CO 3	Applying the management by understanding the various treatment strategies for the diseases.	**BT4**
CO 4	**Analyze** the disease pathology and plan strategies to manage them.	**BT**

COURSE OUTLINE:

Modules	Topics (if applicable) & Course Contents	Periods
I.	1. Introduction of modes of transfer of communicable diseases & general preventive measures. 2. Bacterial Diseases: Tuberculosis, Leprosy, Rhematic fever, Tetanus, Typhoid fever, Diphtheria, Pneumonia, Bacillary Dysentry and Measles. 3. Viral Diseases: Simplex and zoster, Varicella, Measles Mumps, Hepatitis B &C,AIDS&Inflenza. 4. Metabolic and Deficiency Diseases: Diabetes, Anemia, Vitamin & Nutritional, Deficiency diseases, diseases of the endocrine glands	**10**
II	. Diseases of Respiratory System: Asthma, Bronchitis, Massive collapse of lungs, Bronchiectasis Bronchial, Pneumonia, lung abseess, Emphysema, Empyema, Paralysis of diaphragm & vocal cords, chronic infection of larynx and trachea, Abnormalities of trachea, infract of lungs, chronic passive congestion, chronic obstruction pulmonary disease, chest wall deformities. 2. Diseases of Circulatory System: Thromobsis, Embolism, Gangrene, Valvular diseases Hemorrhage, Heart Malformation, various diseases of arteries, diseases of blood forming organs, Anemia, Leukemia, Leucocytosis, Peripheral vascular diseases, diseases of the lymphatic systems.Diseases of the heart-Hypertension, Hypotension, Aortic aneurysm, Endocarditis, Pericarcitis, Aortic Regurgitation, Cardiac Failure, coronary heart diseases, congenital heart malformation and its manifestation.	**10**
III	1. Disease of skin:-Characteristics of normal skin, abnormal changes, types of skin lesions. 2. Conditions – Leprosy, Acne , Boil, Carbuncles, Impetigo , Infections of skin, Herpes, Urticaria, Psoriasis, Skin disorders associated with circulatory disturbances, Warts, Com. Defects in Pigmentation Psoriasis Leucoderma, Fungal infections, Alopecia, Dermatitis Eczema, Skin – Allergies, Venereal.	**10**
IV	1. Diseases of Digestive System: Pharyngitis, spasm of the Oesophagus, Diverticulum stenosis, Gastric ulcer, HemetemesisPeloric stenosis, Dyspepsia, Vomiting, Diarrhoea, Doudenal ulcer etc. 2. Diseases of Liver: Jaundice Cirrhosis of liver, Abscess of liver, Ascitis.	**10**

	3. Diseases of kidney :Plyuria, Hematuria, Uremia, Anuria, Nephritis, Urinary infections, Urinary calculi of application-region wise.	
TOTAL		**40 hours**

Text Book:
1. Davidson's Principles and Practices of Medicine – Edward – Churchill Livingstone
2. Hutchinson's Clinical Methods – Swash- Bailliere Tindall
3. A short Textbook of Medicine- Krishna Rao- Jaypee Brothers
4. A short textbook of Psychiatry – Ahuja Niraj – Jaypee Brothers

Reference Books:
1.API - Text book of Medicine – 5th edition
2 Golwalla – Medicine for students

Title of the Paper: General Surgery and Obstetrics Gynecology **Couse Level: 200**

Subject Code: PHT242M404

L-T-P-C:3-0-0-3 **Total credits: 3**

Course Objectives

To introduce students the general surgical procedures and enable the students to understand the concepts of various surgical conditions like abdominal surgeries, vascular surgeries , thoracic surgeries and also gynecological as well obstetrical.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	Relate and understand the basic physiology and mechanism of child birth.	**BT 1**
CO 2	Understand the various surgical procedures done over human body and also which all are the structures being cut and how to manage the postsurgical patients	**BT 2**
CO 3	Applying the physiotherapy management for various gynecological problems in adolescence and adult conditions like infections, urogenital dysfunction and prolapse of uterus	**BT 3**

CO 4	Analyze about the developmental anatomy of embryonic and fetal periods.	**BT 3**

COURSE OUTLINE:

Modules	Topics (if applicable) & Course Contents	Periods
I.	1. Infection and inflammation-acute / chronic-signs, symptoms, complications & management. 2. Wounds and ulcers– classification, healing, management. 3. Abdominal Surgeries: Surgical anatomy of Anterior Abdominal wall; Surgical approaches; Common abdominal surgeries like Cholecystectomy, Colostomy, Ileostomy, Gastrectomy, Hernias, Appendicectomy, Neprectomy, Prostectomy. 4. Thoracic surgeries**:** Thoracotomy - Definition, Types of Incisions with emphasis to the site of incision, muscles cut and complications. A) Lung surgeries**:** Pnumonectomy Lobectomy, Segmentectomy – Indications, Physiological changes and Complications Thoracoplasty Pleurectomy Pleurodesis and Decortication of the Lung. Intercostal Drainage System B) Cardiac surgeries: An overview of the Cardio-Pulmonary Bypass Machine Extracardiac Operations: Closed Heart surgery, Open Heart surgery. Transplant Surgery – Heart, Lung and Kidney – Indications, Physiological changes and Complications Chest Injuries, evaluation, management.	**10**
II	**Peripheral vascular diseases:** Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following diseases: Atherosclerosis Arteriosclerosis Buergers Raynauds Varicose veins & DVT **Burns and Plastic Surgery:** Burns- causes, classification, ward management, post burn contractures, various Reconstructive & plastic surgeries Skin grafts/flaps- pedicle/ Tube /Muscle flap Types, indications with special emphasis to burns/ wounds, ulcers, post	**10**

	surgical head, neck, face defects and reconstruction. Hypertropic scar & keloid – management c]-Principles of tendon transfers-with special emphasis to hand, foot & facial paralysis **Emergency Surgical Procedures:** Indications, steps, post operative care: Tracheostomy,Burr-hole Craniotomy,Cranioplasty, Deep brain stimulation, Shunting, Laminectomy, Hemilaminectomy, Microvascular decompression surgery, Embolization, Ablative surgery - Thalamotomy and Pallidotomy, Coiling of aneurysm and Clipping of aneurysm, Neural implantation	
III	**1. Anatomy of female genital system and pelvic floor** **2. Pregnancy:** Normal Gestations, Maternal Physiology in Pregnancy, Musculoskeletal disorders in Pregnancy, Antenatal Care,Prenatal and Perinatal Complications,Labour- Stages, Normal & Complications, Pain relief in Labour, Post Natal – Puerperium, Lactation. **3. Menopause:** Physiology, Complications, Effect on Various systems, Management **4. Uro-genital dysfunction** Uterine prolapse – classification & management (Conservative /Surgical) Cystocoele, Rectocoele, Enterocoele Urinary Incontinence: Types, Causes, Assessment and Management. Pelvic Inflammatory Diseases Polycystic Ovarian Disease (PCOD)	**10**
IV	1 **Surgical Procedures involving child birth** Caesarian Section Episiotomy **Definition, Indications and Management of the following surgical procedures;** Dilatation and Curettage Hysterectomy – Total Abdominal and Vaginal Salphigectomy and oopherectomy Neoplasm of Female reproductive organs – surgical management Menstrual cycle and its Disorders Methods of family planning Sterility – management Multiple gestations	**6**
TOTAL		**36 hours**

Text Book:

1.Clinical& Operative surgery by S. Das
2. Text book of Gynecology – by Dutta – New Central Book Agency
3 Text book of Obstetrics - by Dutta – New Central Book Agency

4.Under-graduate Surgery by Nan

Reference Books:
1. Bailey & Love's short practice of Surgery-21st edn.

Title of the Paper: Pathology & Microbiology-II

Course: Major

Subject Code: PHT242M405 **Course Level: 200**

Scheme of Evaluation: Theory **Total credits: 4**

L-T-P-C: 4-0-0-4

Course Objective:

The objectives of the course are to introduce students to Pathology which 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.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Learn** the microbiology of various conditions, diseases and disorders and changes in structure and function of cells during disease condition gained.	**BT 1**
CO 2	**Understand** how to protect themselves and their patients from infections during their interactions and the cell injury & response of different tissues and organs	**BT 2**
CO 3	**Explain** morphology, mode of infection, multiplication of medically important viruses & their treatment.	**BT 2**
CO 4	**Demonstrate** the microbiology of common diseases that therapists would encounter in their daily practice and also the pathology of common diseases that therapists would encounter in their daily practice.	**BT 3**

COURSE OUTLINE:

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	**Immunopathology** Immune system: General concepts. Hypersensitivity: type and examples, antibody and cell mediated tissue injury with examples. Secondary immunodeficiency including HIV infection. Auto-immune disorders: Basic concepts and classification, SLE. AIDS- Aetiology, Modes of transmission, Diagnostic procedures, handling of infected material and health education	10
II	**Endocrine pathology** Diabetes Mellitus: Types, Pathogenesis, Pathology, Laboratory diagnosis Non-neoplastic lesions of Thyroid: Iodine deficiency goiter, autoimmune Thyroiditis, Myxedema, Hashimoto's thyroiditis. Tumours of Thyroid: Adenoma, Carcinoma: Papillary, Follicular, Medullary Adrenal diseases: cortical hyperplasia, atrophy, tuberculosis, tumours of cortex and medulla **Musculoskeletal System Pathology** Osteomyelitis, acute, chronic, tuberculous, mycetoma Metabolic diseases: Rickets/Osteomalacia, osteoporosis, Hyperparathyroidism, Paget's disease. Tumours Classification: Benign, Malignant, Metastatic and synovial sarcoma. Arthritis: Rheumatoid. Osteoarthritis Gout, Tuberculous	10
III	**Bacteriology** -Morphology, classification according to pathogenicity, mode of transmission, methods of prevention, collection and transport of samples for laboratory diagnosis, interpretation of laboratory reports of Staphylococci, Streptococci and Pneumococci, Mycobacteria: Tuberculosis, M. leprae, atypical mycobacteria, Enterobacteriaceae, Vibrois : V. cholerae and other medically important vibrios, Campylobacters and Helicobacters, Pseudomonas **General Virology** General properties: Basic structure and broad classification of viruses. Pathogenesis and pathology of viral infections. Immunity and prophylaxis of viral diseases. Principles of laboratory diagnosis. List of commonly used antiviral agents	10

IV	Streptococcal infections: Rheumatic fever and Rheumatic heart disease, Meningitis, Tuberculosis, Pyrexia of unknown origin, leprosy, Poliomyelitis, Hepatitis, Urinary tract infections, Pelvic inflammatory disease, Wound infection, Malaria, Filariasis, Zoonotic diseases	6
	TOTAL	36 hours

Textbooks:

3) Essential of Medical Microbiology – Bhatia &Lal – Jaypee Brothers.

4) Medical Microbiology –Mims –Jaypee Brothers

Reference Books:

3. Microbiology : An introduction for the Health Sciences – Ackerman and Richards – W.B. Saunders Co.
4. Pathology: Implications for Physical Therapists – Goodmann and Boissonnault – W.B

SEMESTER V

Title of the Paper: Clinical Orthopedics-I **Course: Major**

Subject Code: PHT242M501 **Course Level: 300**

Scheme of Evaluation: Theory & Practical **Total credits: 4**

L-T-P-C: 4-1-0-4

Course Objectives

The objective of this course is to introduce students to acquire knowledge of the orthopaedic problems and enable them to apply and relate in human body. The students will be able to discuss the pathophysiology, clinical manifestations & conservative/Surgical management of various traumatic & non-cases of the musculoskeletal conditions.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy**

		Level
CO 1	**List** the general terminologies and techniques related to orthopaedics.	**BT 1**
CO 2	**Explain** the different types of upper limp fractures and dislocations and its mode of injury.	**BT 2**
CO 3	**Identify** the pathophysiology of every musculoskeletal condition along with its clinical features, complication & medical management.	**BT 3**
CO 4	**Plan** various assessment, tests, communication & medical intervention.	**BT 3**

COURSE OUTLINE:

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	**Orthopaedic Trauma:** Classification of fractures, Fractures with eponyms, Pathological fracture, injuries to joints, injuries to ligaments, muscles and tendon. **Anatomy of Bone,** growth of a long bone, blood supply, Fracture healing, healing of cancellous bone, primary and secondary fracture healing. **Treatment of fractures: General** Principles, Management of open fracture. **Splints and Traction** **Recent Advances in the treatment of fracture.**	15 hours
II	**Approach to a patient with limb injury:** clinical examination, radiological examination, old fracture, approach to polytraumatic patient. **Complications of fracture:** Classification, hypovolaemic shock, ARDS, DVT, Fat embolism syndrome, Crush syndrome, Injury to major blood vessels, nerves, muscles and tendons, joints and viscera, infection, compartment syndrome, delayed union and non-union, AVN, RSD, myositis osscificans. **Injury to Joints**: Dislocation and subluxation. **Fractures in Children,** **PNI** **Treatment of Orthopaedic Disorders:** Operative and non- operative methods. **Injuries around the shoulder:** anatomy, Fracture of clavicle, complication, subluxation and dislocation of SC	15 hours

	joint, shoulder, fracture of neck, greater tubercle, shaft of humerus. **Deformities and their management.**	
III	**Injuries around elbow:** Suptacondylar, lateral condyle, intercondyle, intercondyle, medial epicondyle fracture, fracture of olecranon, head and neck of radius, pulled elbow, and dislocation od elbow. Injuries of the forearm and wrist: fracture of forearm bones, Galeazzi, Colle's, Smith's, Barton's, Scaphoid and lunate fracture, lunate dislocation. **Hand Injuries:** Bannett's and Rolando fracture, metacarpal and phalanges fracture with dislocation, tendon and crash injury of the hand. **Infections of the bones and Joints:** Acute, secondary, chronic, Garre's Osteomyelitis, Brodie's abscess, Saalmonella osteomyelitis,Septic and Gonococcal Arthris, Leprosy. **Tuberculosis of Bones and Joints:** TB of spine, TB of hip, knee and other joints, TB osteomyelitis	10 hours
IV	**Infection of the hand:** classification, etiopathology, acute paonychia, apical subungual infection, terminal pulp space infection, middle & prximal volar space infection **CTEV:** etilogy, pathoanatomy, clinical features nd treatment. **CDH and other congenital malformations.** **Miscellaneous Regional Diseaes:** Torticollis, Cervical rib, Coxa vara	8 hours
	TOTAL	48 hours

Textbook:

1.Maheswari & Mhaskar,'Essential Orthopaedics', Jaypee Publishers, 7th edition.

2. John Ebnezar, Rakesh John,'Textbook of Orthopaedics, Jaypee Publishers, 5th edition.

Reference Books:

1.Apley & Solomon's, 'System of orthopaedic trauma, CRC Press, 10th Edition.

2. S. Brent Brotzman,'Clinical Orthopaedic Rehabilitation, Elsevier, 3rd Edition

Title of the Paper: Clinical Neurology & Neurosurgery-I **Course: Major**

Subject Code: PHT242M502 **Course Level: 300**

Scheme of Evaluation: Theory **Total credits: 4**

L-T-P-C: 4-1-0-4

Course Objectives:

To introduce students the etiology, pathophysiology, signs & symptoms & management of the various neurological conditions. The objectives of this course is that after completion of lectures & demonstrations, in addition to clinical posting, the student will be able to demonstrate an understanding of neurological conditions causing disability and their management.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Relate** and evaluate the patients with certain neurological disorders	**BT 1**
CO 2	**Explain** the neuro anatomical basis of brain for various clinical neurological conditions.	**BT 2**
CO 3	**Identify** the clinical management of the Cerebrovascular Accidents, head and Spinal Cord Injury	**BT 3**
CO 4	**Analyzing** the neurophysiological basis of neurological conditions	**BT 3**

COURSE OUTLINE:

MODULE	**TOPICS & COURSE CONTENT**	**PERIODS**
I	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 ▰ Neurosyphilis ▰ Herpes ▰ HIV infection ▰ Poliomyelitis and Post-polio syndrome ▰ Leprosy ▰ Tetanus Higher cortical, neuro psychological and neurobehavioral	15 hours

	disorders ▪ Physiological nature of Epilepsy, classification, clinical features, investigations, medical& surgical management of following disorders – Non-epileptic attacks of childhood, Epilepsy in childhood, Seizers, and Epilepsy syndromes in adult. ▪ Classification and clinical features of Dementia, Alzheimer's disease. ▪ Causes & investigations of Coma, criteria for diagnosis of Brain death. Cerebellar & Co-ordination disorders ▪ Congenital Ataxia ▪ Friedrich's Ataxia ▪ Tabes dorsalis Disorders of lower cranial nerves & Special Senses Etiology, clinical features, investigations, and management of following disorders ▪ Trigeminal neuralgia ▪ Lesions in facial nerve: Facial palsy, Bell's palsy, Hemi facial spasm ▪ Glossopharangial neuralgia ▪ Lesionns of Vagus, Spinal accessory nerve, Hypoglossal nerve. ▪ Disorders of special senses	
II	Disorders of Myoneural Junction Etiology, classification, signs & symptoms, investigations, management, of following Disorders: ▪ Myasthenia gravis ▪ Eaton-Lambert syndrome 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 , ▪ Epidural abscess, ▪ Transverse myelitis, ▪ Spina bifida, ▪ Conus medullaris syndrome ▪ Bowel & Bladder Dysfunction Head injury Etiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications. Brain tumors and spinal tumors Classification, clinical features, investigations, medical and surgical management.	15 hours

III	**Developmental Delay:** Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications **Respiratory conditions of childhood:** Pneumonias in children – Bacterial & Tubercular, Empyema, Asthma **Orthopedic and Neurological disorders in childhood, Clinical features and management ;** ▪ Cerebral palsy ▪ Meningitis ▪ Encephalitis ▪ Hydrocephalus ▪ Ataxia ▪ Arnold-chiari malformation ▪ Basilar impression & Cerebral malformations ▪ Dandy walker syndrome ▪ Down's syndrome ▪ Floppy infant ▪ GBS ▪ Poliomyelitis ▪ Epilepsy ▪ Neural tube defects in Paediatrics ▪ Muscular dystrophies & Neuropathy	10 hours
IV	1. Substance use disorders, sexual disorders, sleep disorders and eating disorders. 2. Child psychiatry, (mental retardation, developmental disorders, attention deficit, hyperkinetic disorder, enuresis, conduct disorders) 3. Disorders of adult personality and behavior (specific personality disorders, habit and impulse disorders, gender identity disorders) 4. Stress, psychosomatic disorders, suicide, Psychopharmacological management	8 hours
	TOTAL	48 hours

Text Book:

1. Kennedy W Lindsay,'Neurology and Neurosurgery illustrated', Elsevier, 5th edition.

2. Susan B O'Sullivan, Thomas J Schimtz, 'Physical Rehabilitation,F.A Davis, 7th Edition.

Reference Books:

1. Ian D. Penman,' Davidsons Principles and practice of medicine', Elsevier, 24th edition.
2. Martin Kessler,' Neurologic Interventions for Physical Therapy, Elsevier 2nd edition.

Title of the Paper: Community Medicine **Course: Major**

Subject Code: PHT242M503 **Course Level: 300**

Scheme of Evaluation: Theory **Total credits: 4**

L-T-P-C: 4-1-0-4

Course Objectives

The objective of the course is to understand the influence of social and environmental factors of individual and society. Various aspects of health & disease list the methods of health administration, health education & disease preventive measures.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Outline** the effects of the environment and the community dynamics on the health of the individual.	**BT 2**
CO 2	**Compare** the various national health schemes and its benefits.	**BT 2**
CO 3	**Explain** about communicable and non-communicable diseases and its implications.	**BT 2**
CO 4	**Apply** the knowledge to recognize the common health problems including their physical, emotional and social aspects at the individual, family and community levels and deal with public health emergencies.	**BT 3**

COURSE OUTLINE:

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	**Health & Disease:** ▪ Definitions: National & International, Concepts of Health & well-being, Spectrum and Determinants of Health ▪ Natural history of Disease, Concepts of disease control and prevention, Modes of Intervention **Epidemiology:** ▪ Definition and scope. ▪ Principles of Epidemiology and Epidemiological methods, Uses of Epidemiology **Socio-Economical & cultural issues related to morbidity**: ▪ Health problem in vulnerable groups ▪ Pregnant & lactating women, Pelvic floor Dysfunction, Urinary incontinence, ▪ Pre-term babies with high risk, Brain Damage during birth injury	15 hours
II	**Demography and Family Planning** ▪ Family planning-objectives of national family planning programme ▪ Family planning methods: A general idea of advantage and disadvantages of the methods. **Immunization programmes –** children **Occupational Health:** ▪ Occupational hazards, ▪ Occupational diseases ▪ Prevention of occupational diseases. ▪ Social security and other measures for the protection from occupational hazard accidents and diseases	10 hours
III	**Hospital waste management:** ▪ Sources of hospital waste, Health hazards, Waste-management **Disaster Management** ▪ Natural and man-made disasters ▪ Disaster impact and response ▪ Relief phase ▪ Epidemiologic surveillance and disease control, nutrition, rehabilitation, disaster preparedness **Health Education:** ▪ Concepts, aims and objectives ▪ Approaches to health education ▪ Models of health education ▪ Contents of health education ▪ Principles of health education	15 hours

	▪ Practice of health education	
IV	**Addiction** – Alcoholism, Psychosomatic disorders and Smoking **Mental Health:** ▪ Characteristics of a mentally healthy person ▪ Types of mental illness ▪ Causes of mental ill health ▪ Preventive aspects ▪ Mental health services ▪ Alcohol and drug dependence **Nutrition and Health:** ▪ Nutritional problems in public health ▪ Community nutrition programmes	08 hours
	TOTAL	48 hours

Textbook:

1.K. Park, 'Park 's Textbook of Preventive & Social Medicine', Jaypee Brothers publications, 26th edition.

2. Prithwiraj Maiti,'An ultimate guide to community medicine' Jaypee Publishers, 2nd Edition

Reference Books:

1.P. K. Mahajan & M. C. Gupta – Textbook of Preventive & Social Medicine

2. AH Suryakantha, 'Community medicine with Recent advances',Jaypee Brothers, 1st edition

Title of the Paper: Research Methodology and Ethics **Course: Major**

Subject Code: PHT242M504 **Course Level: 400**

Scheme of Evaluation: Theory **Total credits: 4**

L-T-P-C: 4-1-0-4

Course Objective:

After completion of this course the students will be able to explain key research concepts and issues and also read, comprehend, and explain research articles in their academic discipline .The course also focuses on ethical issues and norms of the council ,WCPT and IAP.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	Define and discuss the role and importance of research to health practice	**BT 1**
CO 2	Explain the issues and concepts salient to the research process.	**BT 2**
CO 3	Selecting a research problem, selecting an appropriate research design, and implementing a research project.	**BT 3**
CO 4	Understand the concepts of WCPT ,IAP and ethical issues in the field of physiotherapy .	**BT 2**

COURSE OUTLINE:

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	• Introduction to Research Methodology: Meaning of Research, Objectives of • Research, types of Research, significance of Research, Research Process, Criteria of Good Research. • Defining the Research Problem. • Characteristics of good Hypothesis, Basis for hypotheses	12
II	• Research design: Meaning, Need, Features of Good Design, Concepts, • Types. Basic principles of Experimental Design, various methods of Research. • Tools for Data Collection: Collections of Primary Data, Collection of Data through questionnaire and Schedules, other Observation Interview Methods, Collection of Secondary Data,	12
III	• Sampling: Probability and Non-Probability sampling- types and criteria for Selection. • Reliability and validity of Research tools. • Writing Research Report: Format and style.	12
IV	• Concepts of morality, Ethics & Legality-rules of professional conduct & their Medico-legal &moral implications-The need of Council Act for Physiotherapy. Constitution & Functions of the Indian association of Physical t Therapy. • Functioning of the World Confederation of Physical therapy [W.C.P.T.] & its various branches-Special Interest groups . • Role of W.H.O.& WCPT	12
	TOTAL	**48 hours**

Text books:

1.Research Methodology, Methods & Techniques (3rd Edition) - C R Kothari
2. Research for Physiotherapist: Project Design & Analysis- (2nd edition)- Carolyn M. Hicks
3. Ethical issues: Vol 1: Perspectives for Physiotherapist

Reference Books:

1. Essentials of community physiotherapy and ethics.

Reference Books:

1. Sundarrao, Introduction to biostatistics and Research Methodology, CBS, 1Ed, 2002.
2. Research Methodology - a step by step guide for beginners (Third Edition) - Ranjit Kumar
3.Best and Kahn, Research Methodology, PHI Limited.

Distribution of Credits		
Theory	**Practicum**	**Experiential Learning**
48 hours	-	-

Course: Major

Title of the Paper: CLINICAL EDUCATION I

Subject Code: PHT242M511

L-T-P-C: **0-0-10 -5** **Total credits: 5**

Course Objectives: Every enrolled student has to carry out clinical posting in various clinical establishments in and around Guwahati

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Understanding** the concepts of musculoskeletal, neurological and cardiorespiratory and gynaecological conditions	**BT 1**
CO 2	**Application** of subjective assessment and differentially diagnose the various conditions	**BT 2**
CO 3	**Demonstrate** the clinical assessment procedures of assessment	**BT 3**

CO 4	**Analyse** the various conditions in terms of differential diagnosis	**BT 4**

COURSE OUTLINE:

- Every enrolled student has to carry out clinical posting in various clinical establishments in and around Guwahati.
- They will learn how to take subjective assessments of patients with different medical conditions.
- Students will be expected to share the knowledge they have gained through assignments, case presentations.
- Group discussions will be conducted on various topics related to the cases which will provide a better idea to the students.
- Students will be evaluated based on the case presentations at the end of semester during semester end examinations.

Semester VI

Subject: Clinical Orthopedics-II **Course Level: 300**

Course: Major **Total credits: 4**

Subject Code: **PHT242M601**

Scheme of Evaluation: Theory

L-T-P-C: **4-1-0-4**

Course Objective:

The objective of the course is to provide the knowledge of orthopaedic conditions the therapist would encounter in their practice. After the completion of the lectures and discussion the students will be able to demonstrate an understanding of orthopaedic conditions causing disability, list the etiology, pathoanatomy, clinical features, methods of investigation and its management.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Explain** the various types of lower limb fractures and dislocation, its types and complication, symptoms, investigations and management.	**BT 2**
CO 2	**Classify** the conditions related to spinal column like spinal fracture, PIVD, Sacralization, Spondylolisthesis etc.	**BT 3**
CO 3	**Analyze** the classification, pathoanatomy, clinical features, medical management of various musculoskeletal conditions.	**BT 4**
CO 4	**Analyze** the types of surgeries done in orthopaedic conditions and understand the procedure.	**BT 4**

COURSE OUTLINE :

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	**Pelvic Fractures:** classification, avulsion fracture of AIIS, acetabulum, sacrum and coccyx fracture, pathoanatomy, diagnosis, treatment and complication. **Injuries around the Hip:** Dislocations of hip (anterior, posterior and central), fracture neck of femur and intertrochanteric fracture. **Fracture Shaft of Femur:** pathoanatomy, diagnosis, treatment & complication. **Injuries Around the knee:** mechanism of knee injuries, condylar fracture, patella and tibial plateau fracture, ligament and meniscal injuries.	15 hours
II	**Injuries to the leg ankle and foot:** Fracture of shafts of tibia & fibula, ankle injuries, fracture of calcaneum, talus, metatarsals and phalanges. **Poliomyelitis, CP, Spina Bifida, disorders of muscles and peripheral neuropathies.** **PIVD:** anatomy, pathoanatomy, diagnosis and treatment, Cervical disc prolapse. Approach to a patient with LBP.	15 hours

III	**Bone Tumours.** **Spinal Injuries:** Classifications, clinical features examination and treatment. **Traumatic Paraplegia, Scoliosis, Kyphosis,** **Metabolic Bone diseases:** Constitution of bone, osteoporosis, rickets and osteomalacia, hyperthyroisism, fluorosis.	10 hours
IV	**Arthritis:** RA, ankylosing Sondylitis. **Degenerative Disorders:** OA, Cervical Spondylosis, Lumbar Spondylosis. **Affections of Soft tissues:** Bursitis, tenosynovitis, Dupuytren's contracture, tennis elbow, golfer's elbow, Dequervain's tenosynovitis, trigger finger, ganglion, carpal tunnel syndrome, frozen shoulder, platar fasciitis, painful arc syndrome, meralgia paraesthetica, fibromyalgia. Amputation: Prosthetics and Orthotics. **Arthroscopic and Joint replacement surgeries.** **Imaging Modalities in Orthopaedics.**	08 hours
	Total	48 Hours

Textbook:

1.Maheswari & Mhaskar,'Essential Orthopaedics', Jaypee Publishers, 7th edition.

2. John Ebnezar, Rakesh John,'Textbook of Orthopaedics, Jaypee Publishers, 5th edition.

Reference Books:

1.Apley & Solomon's, 'System of orthopaedic trauma, CRC Press, 10th Edition.

2. S.brent Brotzman,'Clinical Orthopaedic Rehabilitation, Elsevier, 3rd Edition.

Title of the paper: Clinical Neurology & Neurosurgery II **Course Level: 300**

Course: Major **Total credits: 4**

Subject Code: **PHT242M602**

Scheme of Evaluation: Theory

L-T-P-C: **4-1-0-4**

Course Objective:

The objective of the course is to provide students with comprehensive understanding of neurological disorders and neurological principles, equipping them with the knowledge and clinical skills necessary for diagnosis, management and surgical considerations in neurology and neurosurgery. By the end of the course the students will be able to recognize neurological disorders, develop skills in neurological examination.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Explain** the structure and function of the central and peripheral nervous system, including cortical, subcortical, and brainstem, peripheral nervous system.	**BT 2**
CO 2	**Identify** clinical presentations, diagnostic approaches, and management strategies for neurological conditions such as stroke, epilepsy, movement disorders, neurodegenerative diseases.	**BT 3**
CO 3	**Summarize** the principles and applications of diagnostic tools such as CT, MRI, EEG, EMG, NCV studies and lumbar puncture.	**BT 2**
CO 4	**Develop** an approach to medical and surgical management of conditions such as TBI, neurovascular disorders and infections of the nervous system.	**BT 3**

COURSE OUTLINE:

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	Cerebra –vascular accidents Define: Stroke, TIA, RIA, Stroke in evolution, Lacunar infarct. Risk Factors, Causes, Investigations, Differential Diagnosis, Management- Medical & Surgical, Complications 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 ▪ Ballismus, ▪ Athetosis ▪ Tics, Myoclonus ▪ Wilson's disease Polyneuropathy ▪ Classification of Polyneuropathies ▪ Causes, clinical features, management of GBS, Diabetic and Alcoholic Neuropathy	15 hours
II	Disorders & Diseases of muscle ▪ Classification, investigations, imaging methods, Muscle biopsy, management of muscle diseases, genetic counselling. ▪ Classification, etiology, signs & symptoms of Muscular dystrophy and Myotonic dystrophy 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 ▪ Post-irradiation lumbosacral polyradiculopathy. Multiple Sclerosis Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications	15 hours

III	2. Breast feeding and immunization 3. **Prenatal, Perinatal and Postnatal problems and management (**Birth injuries): Neck, shoulder dystocia, Brachial plexus injury, Fractures 4. Congenital abnormalities and management 5.Problems and management of LBW infants	10 hours
IV	1. Psychiatric History, classification and mental status examination 2. Organic mental disorders (delirium, dementia, organic amnestic syndrome and other organic mental disorders) 3. Mood disorders (manic episodes, depressive episodes, bipolar mood disorders) 4. Neurotic stress related and somatoform disorders (Anxiety disorder, phobic anxiety disorders, obsessive compulsive disorders, adjustment disorders, dissociative disorders, somatoform disorders post-traumatic stress Disorder 5. Schizophrenia, delusional disorders and schizoaffective disorders.	08 hours
	Total	48 Hours

Text Book:

1. Kennedy W Lindsay,'Neurology and Neurosurgery illustrated', Elsevier, 5th edition.
2. Susan B O'Sullivan, Thomas J Schimtz, 'Physical Rehabilitation,F.A Davis, 7th Edition.

Reference Books:

1. Ian D. Penman,' Davidsons Principles and practice of medicine', Elsevier, 24th edition.
2. Martin Kessler,' Neurologic Interventions for Physical Therapy, Elsevier 2nd edition.

Title of the Paper: PT in Cardiorespiratory, Surgical & OBG Conditions -I(Theory & Lab)

Course: Major

Subject Code: PHT242M603 **Course Level: 400**

Scheme of Evaluation: Theory + Practical **Total credits: 4**

L-T-P-C: 3-1-2-4

Course Objectives:

The objective of the course is to help students to identify cardio respiratory dysfunction through assessment and investigations and demonstrate all the techniques required to restore the cardiorespiratory function.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Understand** the pathophysiology of various cardiorespiratory disorders	**BT 1**
CO 2	**Understand** importance of various investigations to differentially diagnose	**BT 2**
CO 3	**Application** of the different techniques to assess the cardiorespiratory dysfunction	**BT 3**
CO 4	**Analyze** and plan the treatment goals based on presentation of the condition.	**BT 4**

COURSE OUTLINE:

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	Examination of Cardiovascular System ECG – Normal & Variations due to ischemia &infarction Stress Test Interpretation of radiological & Biochemical Investigations & correlate the same with clinical findings. Common Drugs used in cardiorespiratory conditions	10
II	DISEASES OF THE CARDIO-VASULAR SYSTEM Definition, Etiology, Clinical Features, Complications, Management of the following Cardio-vascular diseases: I.H.D.–Myocardial infarction Valvular Heart Disease – i) Congenital ii) Acquired Infective endocarditis, Myocarditis, cardiomyopathy Rheumatic Fever & Rheumatic Heart Disease Infective Endocarditis PVD	10
III	Examination of Respiratory System Introduction of clinical examination–Breath sounds, X ray chest, ABG, PFT Anatomical and Physiological differences between the Adult and Paediatric lungs.	10
IV	DISEASES OF THE RESPIRATORY SYSTEM Patterns of Respiratory Diseases: Obstructive & Restrictive Definition, Etiology, Clinical Features, Complications, Management of Diseases of the respiratory system Obstructive Lung Diseases like Bronchitis, Emphysema, Bronchial Asthma, Cystic Fibrosis. Restrictive lung diseases: Interstitial Lung Diseases ,Occupational lung diseases like Silicosis Asbestosis, Pneumoconiosis	6

MODULE	TOPICS & COURSE CONTENT	PERIODS
	☔ Diseases of Pleura like Pleural Effusion, Pneumothorax, Hydro pneumothorax, Empyema. ☔ Common Infectious diseases like Tuberculosis, Pneumonia, Lung Abscess, and Bronchiectasis. ☔ Respiratory Failure: Definition, Types, Causes, Clinical Features, Diagnosis and Management	
TOTAL		**36 hours**

Text Book:

- Clinical & Operative surgery by S. Das
- Text book of Gynecology – by Dutta – New Central Book Agency
- Text book of Obstetrics - by Dutta – New Central Book Agency
- Cash`s Text book for Physiotherapists in Chest, Heart & Vascular diseases- Jaypee bros. Publication
- Cash`s text book in General Medical & Surgical conditions for Physio therapists

Reference Books:

- Bailey & Love's short practice of Surgery-21st edn.
- Cardiopulmonary Physical therapy by Irwin Scott.
- Physiotherapy in respiratory care – Alexandra Hough

MODULE	TOPICS & COURSE CONTENT	PERIODS

Title of the Paper: PT in Cardiorespiratory & General Surgical & OBG Conditions-I Lab

Subject Code: **PHT242M611**

Course Objectives:

The objective of the course is to help students to identify cardio respiratory dysfunction through assessment and investigations and demonstrate all the techniques required to restore the cardiorespiratory function.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Understand** the pathophysiology of various cardiorespiratory disorders	**BT 1**
CO 2	**Understand** importance of various investigations to differentially diagnose	**BT 2**
CO 3	**Application** of the different techniques to assess the cardiorespiratory dysfunction	**BT 3**
CO 4	**Analyze** and plan the treatment goals based on presentation of the condition.	**BT 4**

I	1.Skill to palpate all vitals pulses, rhythm, rate, volume & Heart rate/pulse rate discrepancy , Skill to assess B.P. at various sites 2. Examination of Cardiovascular System	10 hours
II	3. Skill of exercise testing- a)6/12 min walk, b)symptom limited c) R.P.E.-Borg scale 4.ECG(Electro-cardiography)	5 hours
III	5.Biochemical analysis-serum enzymes, C.P.K levels, L.D.H., S.G.O.T., S.G.P.T., Troponin T, Lipid profile, electrolyte balance 6.Chest X-ray,	5 hours
IV	7.Pulmonary function testing -obstructive/ restrictive/reversibility 8.Arterial blood gases	4 hours
	TOTAL	**24hours**

Text Book:

- Clinical & Operative surgery by S. Das
- Text book of Gynecology – by Dutta – New Central Book Agency
- Text book of Obstetrics - by Dutta – New Central Book Agency
- Brompton`s hospital guide 5 Physical Rehabilitation - O'sullivan

Reference Books:

- Cash`s Text book for Physiotherapists in Chest, Heart & Vascular diseases- Jaypee bros. Publication
- Cash`s text book in General Medical & Surgical conditions for Physio therapists
- Chest Physical therapy &Pulmonary rehabilitation-by Donna Frownfilter

Experiential Learning: Field visits to institutions & diagnostic centres for orientation to electrodiagnostic tests.

Distribution of Credits		
Theory	**Practicum**	**Experiential Learning**
36 hours	24 hours	18 hours

Title of the Paper: Community Based Rehabilitation (Theory & Lab) Course Level:300

Subject Code: PHT242M604

L-T-P-C: 3-1-2-4 **Total credits: 4**

Scheme of Evaluation: Theory & Practical

Course Objectives

The objective of this course is that student will be able to have a community based perspective with Physiotherapeutic approach. Student will be able to identify rehabilitation methods to prevent disabilities & dysfunctions due to various disease conditions & plan & set treatment goals & apply the skills gained in rehabilitating & restoring functions.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Idea** about the members of rehabilitation team and their role in Rehabilitating the patient.	**BT 1**
CO 2	**Explain** the assessment of geriatrics, pregnancy & Disability evaluation in various conditions and their rehabilitation.	**BT 2**
CO 3	**Apply** the knowledge Identify the environmental and occupational hazards and their control.	
CO 4	**Provide** physiotherapeutic rehabilitation in various conditions related elderly, pregnancy, industrial worker etc. conditions for relief of pain, relaxation, conditioning and posture in community level.	**BT 3**

Course Outcome:

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	**Community Health** WHO definition of health & disease, Health care delivery system – 3 tier System *Rehabilitation: definition, types and Team * Community: Definition, Community based approach, * Community entry strategies, Community initiated v/s Community oriented programme Introduction to CBR: Definition, Historical review, Concept, Need, Objectives, Scope, Members, Models CBR strategies in Health Promotion - Principles of CBR, Difference between Community v/s Institutional Based Rehabilitation, Extension services and mobile units: Introduction, Need, Camp approach Planning and management of CBR programme - Disaster management and role of PT Disability : Evaluation, types & prevention & role of physiotherapy. Rehabilitation in Amputation. National policies for rehabilitation of disabled, architectural barrier for disabled and their modification.	10 hours
II	**Women's Health** Introduction to Woman's Health and Anatomy of pelvic floor. Anatomical and physiological variations associated with pregnancy and menopause. Antenatal, perinatal and postnatal physiotherapy and PT advice on labor positions, pain relief and PT Management of various problems faced in this period Uro-genital dysfunctions: Infections, Prolapse, Polycystic Ovarian Disease, incontinence and their therapeutic interventions. Common Gynecological surgeries and role of physiotherapy Physical fitness in women during pregnancy & menopause. **Geriatrics** Theories of Aging. Anatomical and Physiological changes of aging in – • Musculoskeletal system. • CNS • CVS • RS	10 hours

	• Metabolic, Endocrine, Immune System Assessment in geriatrics Role of physiotherapy in geriatrics fitness (Institutionalized & Community dwelling elders), Falls and its prevention in Geriatrics. Rehabilitation for Parkinson's disease, Alzheimer's, stroke etc.	
III	**Industrial Health** I – Ability Assessment Job description Job demand analysis Task analysis Ergonomic evaluation Injury prevention Employee fitness programme II – Disability management – Acute case Concept of functional capacity assessment Work conditioning Work hardening III – Environmental stress in the industrial area a. Occupational Hazards: Physical agents- Heat, cold, light, noise, Vibration, U.V. radiation, Ionizing radiation, Chemical agents-Inhalation, local action & ingestion, Mechanical hazards- overuse, fatigue. Psychological hazards – monotonic, dissatisfaction in job, anxiety of work completion with quality, mechanical stress in various occupations for eg. Sedentary table work –eg. in executives, clerk, Inappropriate seating arrangement- eg. vehicle drivers Constant standing- eg. watchman, Defense forces, surgeons, Over- eg. exertion in laborers.	10 hours
IV	**Solidarity and cooperation** Solidarity in health care & Physiotherapy Ethical perspective o Solidarity as instrumental value o Solidarity as moral value Threats to solidarity in present-day societies	6 hours

	Social responsibility and health, Sharing of benefits Highest attainable standard of health as a fundamental human right o Universal Declaration of Human Rights o WHO Constitution o Duty, obligation and responsibility physiotherapists for Highest attainable standard of health as a fundamental human right o Responsibilities for governments and various sectors of society o Health and contemporary challenges to global justice • Access to essential health services • The protection of vulnerable populations • Providing health care services across national boundaries Sharing of benefits o Models of benefit-sharing agreements • Fair and equitable options for research subjects • Biopiracy and fair sharing of benefits of genetic resources • Patents and intellectual property • Valid options for promoting fair and equitable access to new diagnostic and therapeutic modalities or to products stemming from them o Integration of capacity-building components to externally funded research and other initiative	
	Total	36 hours

Text Book:

1. S. Sunder - Textbook of Rehabilitation.

2. Waqar Naqvi - Physiotherapy in Community Health & Rehabilitation.

Reference Books:

1. P. K. Mahajan & M. C. Gupta – Textbook of Preventive & Social Medicine
2. K. Park – Park ’s Textbook of Preventive & Social Medicine.

Title of the Paper: Community Based Rehabilitation-I Lab

Subject Code: PHT242M612

Course Objectives :

The objectives of the course is to learn various rehabilitation technique from the perspective of the community. The students will also learn how to make lifestyle easy for a disabled person within the patient's limitation at the community level.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Understand** the assessments for various conditions.	**BT 1**
CO 2	**Explain** the assessment of geriatrics & others disabled conditions.	**BT 2**
CO 3	**Demonstrate** evaluation of disability or dysfunction seen in the community.	
CO 4	**Apply** their skill of management in rehabilitation in various conditions in community set up.	**BT 3**

Course Outline:

Modules	Topics (if applicable) & Course Contents	Periods
I.	Assessment of various conditions related to orthopedic, neurological,cardiac and geriatrics.	**10**
II	Evaluation of various disability & dysfunction. Assess functional independency in various conditions related to physiotherapy management.	**5**

III	Physiotherapy Rehabilitation with ergonomic interventions in various conditions seen in community.	**5**
IV	Different National and International schemes & policies applicable for different community.	**4**
TOTAL		**24 hours**

Text Book:

1. Textbook of Rehabilitation – S. Sunder

2. Preventive &Social Medicine –by Park

Reference Books:

1. Text book of community medicine &Community Health – by Bhaskar Rao
2. Disability 2000 - RCI.

Experiential Learning: Visit to any community health centers, rehabilitation centers for practical exposure

Distribution of Credits		
Theory	**Practicum**	**Experiential Learning**
36 hours	24 hours	18 hours

Course: Major

Title of the Paper: CLINICAL EDUCATION II

Subject Code: PHT242M613

L-T-P-C: **0-0-10 -5** **Total credits: 5**

Course Objectives: Every enrolled student has to carry out clinical posting in various clinical establishments in and around Guwahati

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Understanding** the concepts of musculoskeletal, neurological and cardiorespiratory and gynaecological conditions	**BT 1**
CO 2	**Application** of subjective assessment and differentially diagnose the various conditions	**BT 2**
CO 3	**Demonstrate** the clinical assessment procedures of assessment	**BT 3**
CO 4	**Analyse** the various conditions in terms of differential diagnosis	**BT 4**

COURSE OUTLINE:

- Every enrolled student has to carry out clinical posting in various clinical establishments in and around Guwahati.
- They will learn how to take subjective assessments of patients with different medical conditions.
- Students will be expected to share the knowledge they have gained through assignments, case presentations.
- Group discussions will be conducted on various topics related to the cases which will provide a better idea to the students.
- Students will be evaluated based on the case presentations at the end of semester during semester end examinations.

SEMESTER VII

Subject: PT in Orthopedics & Traumatology -I(T&L) **Course level:400**

Course: Major **Total credits: 4**

Subject Code: PHT242M701

Scheme of Evaluation: Theory & practical

L-T-P-C: 3-1-2-4

Course Objectives: The objective of this course is to make the students understand the assessment, evaluation and examination of various orthopedic and sports problems. The students will also learn to manage the patient's problems according to the condition.

Course Outcome:

On successful completion of the course, the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Relate** the importance of assessment for managing various musculoskeletal and sports conditions.	**BT 1**
CO 2	**Explain** the aetiology, pathophysiology, symptoms and management of various conditions.	**BT 2**
CO 3	**Apply** their skill of management in rehabilitation in various conditions in individual or in community set up.	**BT 3**
CO 4	**Examine** a person's condition with the knowledge of differential diagnosis.	**BT 4**

Course Outline:

Modules	Course Content	Periods
I.	**Fractures and dislocations of the spine, extremities – classification, management & complications.** ·PT assessment and management of upper limb fractures and dislocations. · PT assessment and management of lower limb fractures and dislocations, including pelvis. · PT assessment and management of spinal fractures · PT management in complications - early and late - shock, compartment syndrome, VIC, fat embolism, delayed and mal-union, RSD, myositis ossificans, AVN, pressure sores etc. · Principles of PT management in fractures - Guidelines for fracture treatment during immobilization and guidelines for treatment after immobilization period.	10
II.	**Physiotherapy Management of Deformities** ·Congenital: CTEV, CDH, Torticollis, pes planus, pes cavus and other common deformities. · Acquired: scoliosis, kyphosis, coxa vara, genu varum, valgum and recurvatum. **Infectious diseases of the bone & joints** ·Osteomyelitis – acute and chronic · Septic arthritis and Pyogenic arthritis · TB spine and major joints - knee and hip	10
III.	**Degenerative and Inflammatory Conditions** ·Osteoarthritis - emphasis mainly on knee, hip and hand · Rheumatoid Arthritis · Ankylosing spondylitis · Gout · Perthes disease	10

IV.	**Fundamental Principles of Sports** Sports Medicine: Team approach Principles and Causes of Sports Injuries, prevention of sports injuries. Sports-specific fitness training, principles and methods Electrotherapy in sports injuries Cardio pulmonary Resuscitation; Splinting, Stretcher use–Handling and transfer, Management of, Acute asthma, burn, Heat stroke and Heat illness. Physical Fitness Tests.	6
TOTAL		36 hours

Text Book:

1.Physical Rehabilitation Assessment and Treatment – O'Sullivan Schmitz

2.Orthopedic Physical therapy – by Donatelli.

Reference Books:

1.Outline of orthopedics – Adams Hamblen

2. Sport and physical therapy – Bernhardt Donna, Churchill Livingstone, London 1995.

3. Bird, S. R., Black, N. Sports Injuries: Causes, Diagnosis, Treatment and Prevention. Cheltenham: Stanley Thomes, 1997.

Title of the paper: PT in Orthopedics & Traumatology -I Lab

Subject Code: PHT242M711

Course Objectives:

The objective of this course is to make the students understand about the assessment, evaluation and examination of various patients with orthopaedic problems. The students will also manage the treatment methodology for different bone and joint disorders.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Understand** the assessments for various conditions.	**BT 1**
CO 2	**Explain** the assessment of geriatrics & others disabled conditions.	**BT 2**
CO 3	**Demonstrate** evaluation of disability or dysfunction seen in the community.	**BT 3**
CO 4	**Apply** their skill of management in rehabilitation in various conditions in community set up.	**BT 3**

COURSE OUTLINE:

Modules	**Course Content**	**Periods**
I.	**Evaluation and treatment planning of,** • Fractures and dislocations of the spine • Fractures of extremities	10
II.	• Physiotherapy Management of Deformities • Infectious diseases of the bone & joints	**5**
III.	**Evaluation and treatment planning of,** ·Osteoarthritis - emphasis mainly on knee, hip and hand · Rheumatoid Arthritis · Ankylosing spondylitis · Gout · Perthes disease	5

IV.	Sports injuries Sports-specific fitness training Cardio pulmonary Resuscitation; Splinting, Stretcher use–Handling and transfer Physical Fitness Tests	4
TOTAL		24 hours

Text Book:

1.Physical Rehabilitation Assessment and Treatment – O'Sullivan Schmitz

2. Orthopedic Physical therapy – by Donatelli.

Reference Books:

1.Outline of orthopedics – Adams Hamblen

2. Apley`s textbook of Orthopaedics

1. Sports Physiotherapy by Maria ZuluaMora JC, Przkora R, Cruz-Almeida Y. Knee osteoarthritis: pathophysiology and current treatment modalities. Journal of pain research. 2018 Oct 5:2189-96.ga

2. Sport and physical therapy – Bernhardt Donna, Churchill Livingstone, London 1995.

3. Bird, S. R., Black, N. Sports Injuries: Causes, Diagnosis, Treatment and Prevention. Cheltenham: Stanley Thomes, 1997.

Experiential Learning: Visit to any community health centers, rehabilitation centers for practical exposure.

Distribution of Credits		
Theory	**Practicum**	**Experiential Learning**
36 hours	24 hours	18 hours

Title of the Paper: PT in Neuro & Psychosomatic Conditions-I (T+L) **Course: Major**

Subject Code: PHT242M702 **Course Level: 400**

Scheme of Evaluation: Theory + Practical **Total credits: 4**

L-T-P-C: 3-1-2-4

Course Objectives:

The objectives of this course are to introduce the neurological disorders affecting human body systems and understand the physiotherapy management of the same. After following this course students will also gain knowledge regarding psychosomatic disorders. The lectures & demonstrations, in addition to clinics, the student will be able to demonstrate an understanding of neurological conditions causing disability and their management.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	Relate the Neurophysiological basis of neurological conditions which drives to evaluate the patients with certain disorders	BT 1
CO 2	Explain the causes, signs, symptoms, clinical management of the Cerebrovascular Accidents, head and Spinal Cord Injury	BT 2
CO 3	Identify, analyse and apply the neuro anatomical basis of brain for various clinical neurological conditions.	BT 3
CO 4	Analyzing the demyelinating, degenerative disease of the brain, diseases like myopathies, infections and peripheral neuropathy	BT 3

COURSE OUTLINE:

Modules	Topics (if applicable) & Course Contents	Periods

I.	1. Structure and function of Nervous System 2. Theories of motor control & motor learning 3. Neurological Assessment : Assessment of Higher mental functions, Cranial Nerves, Sensory system, Motor system, Reflexes, Co-ordination, Balance, functional abilities, neuropathic pain and investigation.	10
II	4. Application of transfer & functional re-education exercises- Postural exercises & Neurological Gait Assessment and management/ training. 5. Principles of Application of Neuro therapeutic skills like PNF, NDT, Brunnstorm, Bobath & Rood's approaches. 6. Principles and methods of using tools of Therapeutic gymnasium such as Vestibular ball, tilt board, bolsters, etc. in neurological conditions	10
III	7. Evaluation & physiotherapy assessment with appropriate reasoning for planning & implementation of treatment technique for following neurological conditions: i. Cerebrovascular Accidents: Hemiplegia, Disorders of cerebral circulation , Space occupying lesions , Traumatic Head Injury ii. Disorders of spinal cord -Spinal Cord Injury , Syringomyelia, Transverse myelitis , Sub-acute combined degeneration of spinal cord	10
IV	8. Pediatric Neurology- • Developmental milestones and Developmental reflexes • Neuro developmental screening tests 9. Management & use of various Neurophysiological approaches in High Risk babies, Minimum brain damage, Developmental disorders, Cerebral palsy, Autism, Down's Syndrome, Hydrocephalus, Spina bifida and spinal dysraphism	6
	TOTAL	36 hours

Text Book:

1. Physical rehabilitation by Susan O Sullivan
2. Neurological Rehabilitation - Darcy Umphred
3. Illustrated Neurology & Neurosurgery: Lindsay
4. Pediatric physical Therapy – Stephen Tecklin

Reference Books:

1. Brains Diseases of Nervous System- Michael Donaghy
2. Krusen's Handbook of Physical Medicine and Rehabilitation – Kottke and Lehmann
3. Textbook of Neurology- Victor Adams

Title of the Paper: PT in Neurological & Psychosomatic Conditions Lab -I

Subject Code: PHT242M712

COURSE OUTLINE:

Modules	Topics (if applicable) & Course Contents	Periods
I.	1. Evaluation & treatment planning; demonstrate skills of assessment like Practical demonstration of basic principles of physiotherapy assessment & functional assessment	**10**
II	2. Application of Neuro therapeutic skills like PNF, NDT, Brunnstorm, Bobath & Rood's approaches in various conditions	**5**
III	3. Application of transfer & functional re-education exercises- Postural exercises, & positioning	**5**
IV	4. Neurological Gait Assessment and management/ training 5. Demonstration of Mat activities	**4**
TOTAL		**24 hours**

Text Book:

1. Cash's Textbook of Neurology for Physiotherapists - Patricia Downie
2. Therapeutic exercise – Colby & Kisner
3. Practical Exercise Therapy - Margaret Hollis
4. Treatment of Cerebral Palsy and Motor Delay – Levitt and Addison

Reference Books:

1. Therapeutic Exercise – Basmajian
2. Right in the Middle: Selective Trunk Activity in the Treatment of Adult Hemiplegia – Patricia M. Davies

Experiential learning: Visit to various hospitals, neurorehabilitation centres, palliative care centres & old age homes

Distribution of Credits		
Theory	**Practicum**	**Experiential Learning**
36 hours	24 hours	18 hours

Title of the Paper: PT in Cardiorespiratory, Surgical & OBG Conditions -II(T+L)

Course: Major

Subject Code: PHT242M703 **Course Level: 400**

Scheme of Evaluation: Theory + Practical **Total credits: 4**

L-T-P-C: 3-1-2-4

Course Objectives:

The objective of the course is to help students to identify cardiorespiratory dysfunction through assessment and investigations and demonstrate all the techniques required to restore the cardiorespiratory function.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**

CO 1	**Understand** the pathophysiology of various cardio respiratory disorders and importance of various investigations to differentially diagnose	**BT 1**
CO 2	**Application** of the different techniques to assess the cardio respiratory dysfunction.	**BT 2**
CO 3	**Application** of the different techniques for treatment of the cardio respiratory dysfunction.	**BT 3**
CO 4	**Analyse** and plan the treatment goals based on presentation of the condition.	**BT 4**

Course Outline

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	Thoracic Surgery Pre- and post-operative management by physiotherapy of the following conditions: - 1. Lobectomy, Pneumonectomy, Thoracotomy, thoracoplasty. Management of General, Gynecology and Obstetrics surgery 1. Common abdominal surgeries 2. Common operation of reproductive system, including surgical intervention for child delivery. Ante natal &post-natal, physiotherapy. 3. Common organ transplant surgeries- heart, lung	6
II	Wounds, Burns &Plastic surgery Review of pathological changes and principle of pre- and post-operative management by physiotherapy of the following conditions: 1. Wounds, ulcers, pressure sores. 2. Burns & their complications. 3. Common reconstructive surgical proceeding of the management of wounds, ulcers, burns & consequent contractures & deformities. 4. Physiotherapy management of Peripheral vascular disorders.	10
III	1.Physiotherapy techniques to increase lung volume 🎬 Positioning and Mobilization 🎬 Breathing exercises 🎬 Neurophysiological Facilitation of Respiration 🎬 Mechanical aids –Incentive Spirometer, CPAP, IPPB, BiPAP 2.Physiotherapy techniques to decrease work of breathing	10

MODULE	TOPICS & COURSE CONTENT	PERIODS
	Energy Conservation and Positioning Breathing re-education – Breathing control techniques 3.Physiotherapy techniques to clear secretions Hydration, Humidification & Nebulization Mobilization and Breathing exercises Postural Drainage Manual techniques – Percussion, Vibration and Shaking, Rib Springing ACBT, Autogenic Drainage Mechanical Aids – PEP, Flutter, Acapella Facilitation of Cough and Huff & Suctioning	
IV	1.Pulmonary Rehabilitation 2. Oxygen therapy and Mechanical Ventilation 3. Cardiac Rehabilitation 4. Cardio-pulmonary resuscitation 5. I.C.U and its management	10
TOTAL		**36 hours**

Text Book:

- Clinical & Operative surgery by S. Das
- Text book of Gynecology – by Dutta – New Central Book Agency
- Text book of Obstetrics - by Dutta – New Central Book Agency
- Cash`s Text book for Physiotherapists in Chest, Heart & Vascular diseases- Jaypee bros. Publication
- Cash`s text book in General Medical & Surgical conditions for Physio therapists
- Chest Physical therapy &Pulmonary rehabilitation-by Donna Frownfilter

Reference Books:

- Bailey & Love's short practice of Surgery-21st edn.
- Cardiopulmonary Physical therapy by Irwin Scott.
- Physiotherapy in respiratory care – Alexandra Hough

Title of the paper: PT in Cardiorespiratory, Surgical & OBG Conditions -II Lab

Subject Code: **PHT242M713**

Course Outline:

Text Books:

- Cardiopulmonary Physical therapy by Irwin Scott.
- Physiotherapy in respiratory care – Alexandra Hough

Reference Books:

MODULE	TOPICS & COURSE CONTENT	PERIODS
I	.Planning exercise for Antenatal and postnatal females. .Pre and Post operative management for Pulmonary Surgeries .	10 hours
II	Positioning and Mobilization Breathing exercises Neurophysiological Facilitation of Respiration	5 hours
III	Postural Drainage Manual techniques – Percussion, Vibration and Shaking, Rib Springing ACBT, Autogenic Drainage	10 hours
IV	I.C.U equipment's and use of incentive spirometer Cardio pulmonary Resuscitation Mechanical Aids – PEP, Flutter, Acapella Facilitation of Cough and Huff & Suctioning	5 hours
	TOTAL	**30 hours**

Bailey & Love's short practice of Surgery-21st edn

Experiential Learning: Field visits to institutions & diagnostic centres for orientation to electrodiagnostic tests.

Distribution of Credits		
Theory	**Practicum**	**Experiential Learning**

44 hours	30 hours	16 hours

Title of the Paper: Orthotics & Prosthetics **Course Level: 400**

Course: Major

Subject Code: PHT242M704

L-T-P-C: **4-0-0-4** **Total credit : 4**

Scheme of Evaluation: Theory

Course Objective:

Designed to assess the students to acquire the understanding of the normal physiology of human body and understand the alteration in the physiology for the fabrication of the prosthesis and orthosis.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Explain** the terms orthotics and prosthetics.	**BT 1**
CO 2	**Understand** the nomenclature—the naming of orthoses and prostheses in relation to the joint they support or replace.	**BT 2**
CO 3	**Apply and obtain basic understanding of materials**.	
CO 4	**Analyzing** Understanding primarily with the **rehabilitation of people with locomotive or neuromuscular disorders.**	**BT 3**

COURSE OUTLINE:

Modules	Topics (if applicable) & Course Contents	Periods
I.	**Introduction**: Introduction to Prosthetics, definitions of various terminologies, Historical development in Lower Extremity Prosthetics in India and abroad. **Prosthetic Feet**: Various types of Prosthetic feet. Conventional foot. Rocker, SACH foot, modified SACH Foot. Jaipur Foot, **Partial Foot**: Various types of Partial foot prosthesis. Biomechanics of Partial foot prosthesis, uses of Partial foot prosthesis, Fabrication Technique for partial foot prosthesis. **Syme's**: Various types of Symes Prosthesis, Prosthetic Components.	10
II	**Knee Joints:** Different types of Endoskeletal and exoskeletal knee joints - **Hip Joints:** For above knee as well as for hip disarticulation/ hemi- pelvictomy – all types of hip joints especially single axis and Swivel type. **Through Knee Prosthesis:** Various types of through knee prosthesis - Through knee prosthetic Components. Materials used for through knee prosthesis.	8
III	**General**: Introduction to Orthotics, types, definitions of various terminologies, History of Orthoses in India and abroad. Various materials used in Orthotics. **AFO (Ankle foot orthosis):** Conventional AFO-, Plastic AFO (custom moulded), Articulated A.F.O & various types of ankle joints **Club foot Orthosis**: Orthotic management of CTEV, Ankle support Orthotic management of Anesthetic Foot. Orthosis for the management of fracture below knee.	15
IV	**Above knee Orthotics:** Types of knee & Hip joints **Orthotics Components:** Prescription principles of various types of Knee Orthoses (KO), Knee Ankle foot Orthoses (KAFO), Hip Knee Ankle foot Orthoses (HKAFO). RGO & ARGO Orthoses	**15**
TOTAL		48 hours

Text Book:

1. Prosthetics & Orthotics by Shurr. G. Donald & J.W.Michel

2. Prosthetics & Orthotics of Lower Limb & Spine by Seymour, Ron

Reference book :

1.Physical Rehabilitation by Susan O'Sullivan

2.Orthotics & Prosthetics in Rehabilitation by Michelle M. Lusardi

Course: Major

Title of the Paper: CLINICAL EDUCATION III

Subject Code: PHT242M714

L-T-P-C: **0-0-10-5** **Total credits: 5**

Course Objectives: Every enrolled student has to carry out clinical posting in various clinical establishments in and around Guwahati

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Understanding** the concepts of musculoskeletal, neurological and cardiorespiratory and gynaecological conditions	**BT 1**
CO 2	**Application** of assessment techniques to assess and diagnose the various conditions	**BT 2**
CO 3	**Demonstrate** the clinical assessment techniques and treatment techniques.	**BT 3**
CO 4	**Analyse** the various conditions and planning the intervention protocol	**BT 4**

COURSE OUTLINE:

- Every enrolled student has to carry out clinical posting in various clinical establishments in and around Guwahati.
- They will learn how to assess, evaluate, diagnose and plan the management of the patients with different medical conditions.

- Students will be expected to share the knowledge they have gained through assignments, case presentations.
- Group discussions will be conducted on various topics related to the cases which will provide a better idea to the students.
- Students will be evaluated based on the case presentations and demonstrations of various techniques of patient handling and management at the end of semester during semester end examinations.

SEMESTER VIII

Title of the paper: PT in Orthopedics & Traumatology -II(T&L) **Course level:400**

Course: Major **Total credits: 4**

Subject Code: PHT242M801

Scheme of Evaluation: Theory & Practical

L-T-P-C: 3-1-2-4

Course Objective: The objective of this course is to make the students understand about the assessment, evaluation and examination of various orthopedic and sports problems. The students will also learn to manage the patient's problems according to the condition.

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Define** various types of musculoskeletal and sports injuries and role as a physiotherapist in these conditions.	**BT 1**
CO 2	**Identify** various musculoskeletal and sports injuries and able to clinically diagnose them.	**BT 2**
CO 3	**Apply** various techniques for treating and managing various musculoskeletal and sports conditions.	**BT 3**
CO 4	**Analyze** their knowledge to deal with on field sports injuries during a sports event.	**BT 4**

Course Outline:

Modules	Course Content	Periods
I.	**Orthopedic surgeries:** Pre and post-operative PT assessment, goals, precautions and PT management of the following surgeries such as: o Arthroplasty: THR, TKR, Reverse shoulder arthroplasty o Arthrodesis o Osteotomy **General Rehabilitation Principles in injuries:** o Shoulder o Lateral and medial epicondylitis o Adhesive capsulitis o Ankle sprains	10
II.	**Spinal conditions** PT assessment, aims, and conservative & surgical management and home program of the following conditions - · Cervical spondylosis · Lumbar spondylosis · Intervertebral disc prolapse · Spinal canal stenosis · Spondylolisthesis · Spondylolysis · Coccydynia · Sacralisation · Lumbarisation · Sacro-iliac joint dysfunction	**10**

III.	**Amputation** ·Definition, levels, indications, types, PT assessment, aims, management pre and post-operatively. · PT management with emphasis on stump care and bandaging. · Prosthesis Prescription and Training **Traction** · Effect, Types, Modes, Indications, Contraindications, Dosage **Peripheral Joints** PT assessment, aims, and conservative & surgical	10
IV.	**Regional Sports Conditions:** Soft Tissue Injuries Sports Concussion, Neck Pain, Shoulder Pain, Elbow And Arm Pain Low Back Pain Buttock Pain Acute Knee Injuries Shin Pain, Calf Pain Acute Ankle injuries **Fatigue Assessment** **Enhancing Sports Performance:** Maximizing Performance: sports psychology and nutrition and sports and exercise-associated emergencies and first aid.	6
TOTAL		36 hours

Text Books:

1. Sports Physiotherapy by Maria Zuluaga

2. Sport and physical therapy – Bernhardt Donna, Churchill Livingstone, London 1995.

3. Bird, S. R., Black, N. Sports Injuries: Causes, Diagnosis, Treatment and Prevention. Cheltenham: Stanley Thomes, 1997.

Reference Books:

1. Physical Rehabilitation Assessment and Treatment – O'Sullivan Schmitz

2. Orthopedic Physical therapy – by Donatelli.

3. Essentials of Orthopaedic and Applied Physiotherapy- by Joshi and Kotwal

Title of the paper: PT in Orthopedics & Traumatology -II Lab

Subject Code: PHT242M811

Course Outline:

Modules	**Course Content**	**Periods**
I.	• Evaluation for Orthopaedic surgeries • General Rehabilitation Principles in injuries	5
II.	• Evaluation and treatment planning for Spinal conditions • Special tests for various conditions	**10**
III.	• Musculoskeletal conditions of the hands • Musculoskeletal conditions of the feet	5
IV.	• Sports-specific fitness training • Cardio pulmonary Resuscitation; Splinting, Stretcher use–Handling and transfer • Fatigue Assessment	4
TOTAL		24 hours

Textbook:

1. Physical Rehabilitation Assessment and Treatment – O'Sullivan Schmitz

2. Orthopaedic Physical Therapy – by Donatelli.

Reference Books:

1. Outline of Orthopaedics – Adams Hamblen

2. Apley`s textbook of Orthopaedics

Experiential Learning: Field visits to various institutions, hospitals & sports centres for orientation.

Distribution of Credits		
Theory	**Practicum**	**Experiential Learning**
36 hours	24 hours	18 hours

Title of the paper: PT in Neurological & Psychosomatic Conditions-II(T&L) Course level:400

Course: Major Total credits: 4

Subject Code: PHT242M802

Scheme of Evaluation: Theory & Practical

L-T-P-C: 3-1-2-4

Course Objectives

The objectives of this course are to introduce the neurological disorders affecting human body systems and understand the physiotherapy management of the same. After following this course students will also gain knowledge regarding psychosomatic disorders. The lectures & demonstrations, in addition to clinics, the student will be able to demonstrate an understanding of neurological conditions causing disability and their management.

Course Outcomes

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Relate the** Neurophysiological basis of neurological conditions which drives to evaluate the patients with certain disorders	**BT 1**
CO 2	**Explain** the causes, signs, symptoms, clinical management of the Cerebrovascular Accidents, head and Spinal Cord Injury	**BT 2**
CO 3	**Identify, analyse and apply** the neuro anatomical basis of brain for various clinical neurological conditions.	**BT 3**
CO 4	**Analyzing** the demyelinating, degenerative disease of the brain, diseases like myopathies, infections and peripheral neuropathy	**BT 3**

COURSE OUTLINE:

Modules	Topics (if applicable) & Course Contents	Periods
I	1. Understanding sensory system & Organization of sensory strategies for efficient motor output. 2. Skills of sensory – motor learning & Neuro-muscular skeletal training 3. Application of skills of Co-ordination & Balancing exercises by using techniques based on Neuro-physiological principles	10
II	4. Evaluation & physiotherapy assessment with appropriate reasoning for planning & implementation of treatment technique for following neurological conditions: i) Infections of Nervous System – Meningitis, Encephalitis , Neurosyphilis, Tabes dorsalis ,Poliomyelitis and Post-Polio Residual Paralysis , Leprosy ii). Demyelinating diseases of the nervous system-Multiple sclerosis	10
III	iii) Lesions of Extra-pyramidal system & Basal ganglia - Parkinson's Disease , Spasmodic torticollis, Athetosis, Chorea & Dystonia iv) Degenerative disorders - Motor Neuron Diseases , Hereditary Ataxia, Peroneal muscle atrophy, S.M.A	10

IV	v) Disorders of Peripheral nerves -Traumatic Nerve Injury, Tumors, Infective & Metabolic lesions of nerves vi) Disorders of muscles and neuromuscular junction - Muscular Dystrophies , Myasthenia Gravis & myasthenia syndrome vii) Polyneuropathy -Classification of Polyneuropathies , GBS, Diabetic and Alcoholic Neuropathy viii) Cerebellar & Co-ordination disorders , Congenital Ataxia, Friedrich Ataxia	6
	TOTAL	**36 hours**

Text Book:

1. Physical rehabilitation by Susan O Sullivan
2. Neurological Rehabilitation - Darcy Umphred
3. Illustrated Neurology & Neurosurgery: Lindsay
4. Tidy's Physiotherapy - Stuart Porter

Reference Books:

1. Brains Diseases of Nervous System- Michael Donaghy
2. Krusen's Handbook of Physical Medicine and Rehabilitation – Kottke and Lehmann
3. Textbook of Neurology- Victor Adams

Title of the Paper: PT in Neurological & Psychosomatic Conditions-II Lab

Subject Code: PHT242M812

Course Outline:

Modules	Topics (if applicable) & Course Contents	Periods
I.	1. Evaluation & treatment planning; demonstrate skills of assessment like Practical demonstration of basic principles of physiotherapy assessment, functional assessment	**5**

II	2.Application of Neuro therapeutic skills like PNF, NDT, Brunnstorm, Bobath & Rood 's approaches in various conditions	**10**
III	3. Application of transfer & functional re-education exercises- Postural exercises,	**5**
IV	4. Neurological Gait Assessment and management/ training 5. Coordination & balance exercises	**4**
TOTAL		**24 hours**

Text Book:

1. Cash's Textbook of Neurology for Physiotherapists - Patricia Downie

2. Therapeutic exercise – Colby & Kisner

3. Practical Exercise Therapy - Margaret Hollis

Reference Books:

1.Therapeutic Exercise – Basmajian

2.Right in the Middle: Selective Trunk Activity in the Treatment of Adult Hemiplegia – Patricia M. Davies

Experiential learning: Visit to various hospitals, neurorehab centres, palliative care centres & old age homes.

Distribution of Credits		
Theory	**Practicum**	**Experiential Learning**
36 hours	24 hours	18 hours

Course: Major

Title of the Paper: CLINICAL EDUCATION IV

Subject Code: PHT242M813

L-T-P-C: **0-0-10-5** **Total credits:5**

Course Objectives: Every enrolled student has to carry out clinical posting in various clinical establishments in and around Guwahati

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Understanding** the concepts of musculoskeletal, neurological and cardiorespiratory and gynaecological conditions	**BT 1**
CO 2	**Application** of assessment techniques to assess and diagnose the various conditions	**BT 2**
CO 3	**Demonstrate** the clinical assessment techniques and treatment techniques.	**BT 3**
CO 4	**Analyse** the various conditions and planning the intervention protocol	**BT 4**

COURSE OUTLINE:

- Every enrolled student has to carry out clinical posting in various clinical establishments in and around Guwahati.
- They will learn how to assess, evaluate, diagnose and plan the management of the patients with different medical conditions.
- Students will be expected to share the knowledge they have gained through assignments, case presentations.
- Group discussions will be conducted on various topics related to the cases which will provide a better idea to the students.
- Students will be evaluated based on the case presentations and demonstrations of various techniques of patient handling and management at the end of semester during semester end examinations.

Course : Major

Title of the Paper: RESEARCH PROJECT

Subject Code: PHT242S821

L-T-P-C: **0-0-24 -12** **Total credits:12**

Course Objectives: This course focuses on educating students on research in form of research projects on topics of their interests in Physiotherapy.

Course Outcomes:

On successful completion of the course the students will be able to:		
SI No	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**Find** the opportunities for learning that will help them to expand knowledge.	**BT 1**
CO 2	**List** most recent discoveries and new information in the field of physiotherapy.	**BT 2**
CO 3	**Apply** skill in treating a patient based on scientific evidence.	**BT 3**
CO 4	**Distinguish** lies and support the truth.	**BT 4**

DETAILED SYLLABUS:

Every candidate shall submit in the prescribed proforma, a synopsis containing particulars of proposed research project work on or before the dates notified by the university. The research project is aimed to train an undergraduate student in research methods and techniques. Every candidate pursuing BPT degree course is required to carry out work on a selected research project under the guidance of a recognized postgraduate teacher. The result of such a work shall be submitted in the form of research project. The research project will be reviewed by the assigned guide at the end of the semester before the submission. It is compulsory for each student to carry out research project under faculty guidance as a part of the academic curriculum in the end semester.