



**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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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 relationships. |

| Sl.no. | Graduate Attribute | The Learning Outcomes Descriptors <i>(The graduates should be able to demonstrate the capability to:)</i> |
|--------|------------------------------------|--|
| | | 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 <i>The graduates will acquire the following:</i> |
|--------|--|--|
| 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 <i>The graduates will acquire the following:</i> |
|--------|--|--|
| 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 academic 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 correlating 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 | 5% |
| Vii | Attendance | 5 | Every month | A | |
| 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 | 4 | 2 | 1 | 2 |
| 2 | PHT242M102/ PHT242M112 | Human Physiology-I (T&L) | 100 | 4 | 2 | 1 | 2 |
| 3 | PHT242M103/PHT242M113 | Biomechanics-I(T&L) | 100 | 4 | 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 | | | | 26 | | | |
| BPT 2ND SEMESTER | | | | | | | |
| MAJOR COURSES | | | | | | | |
| 1 | PHT242M201/PHT242M211 | Human Anatomy- | 100 | 4 | 2 | 1 | 2 |

| | | | | | | | |
|---|------------------------|---|-----|-----------|---|---|---|
| 2 | PHT242M202/PHT242M212 | Human Physiology-II | 100 | 4 | 2 | 1 | 2 |
| 3 | PHT242M203/PHT242M213 | Biomechanics-II(T&L) | 100 | 4 | 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 | | | | 26 | | | |
| BPT 3RD SEMESTER | | | | | | | |
| MAJOR COURSE | | | | | | | |
| 1 | PHT242M301/PHT242M311 | Electrotherapy-I(T&L) | 200 | 4 | 2 | 1 | 2 |
| 2 | PHT242M302/PHT242M312 | Exercise Therapy-I (T&L) | 200 | 4 | 2 | 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 | 2 | 1 | 2 |
| 2 | PHT242M402/PHT242M412 | Exercise Therapy-II (T&L) | 200 | 4 | 2 | 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 | 3 | 1 | 0 |

| | | | | | | | |
|------------------------------------|-----------------------|--|-----|-----------|---|---|----|
| 2 | PHT242M502 | Clinical Neurology & Neurosurgery-I | 300 | 4 | 3 | 1 | 0 |
| 3 | PHT242M503 | Community Medicine | 300 | 4 | 3 | 1 | 0 |
| 4 | PHT242M504 | Research Methodology & Ethics | 300 | 4 | 3 | 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 | 3 | 1 | 0 |
| 2 | PHT242M602 | Clinical Neurology & Neurosurgery-II | 300 | 4 | 3 | 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 | 2 | 1 | 2 |
| 2 | PHT242M702/PHT242M712 | PT in Neurological & Psychosomatic | 400 | 4 | 2 | 1 | 2 |

| | | | | | | | |
|------------------------------------|-----------------------|---|-----|-----------|---|---|----|
| | | Conditions-I(T&L) | | | | | |
| 3 | PHT242M703/PHT242M713 | PT in Cardiorespiratory, Surgical & OBG Conditions-II(T&L) | 400 | 4 | 2 | 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 | 2 | 1 | 2 |
| 2 | PHT242M802/PHT242M812 | PT in Neurological & Psychosomatic Conditions-II(T&L) | 400 | 4 | 2 | 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: 2-1-2-4

Total credits: 4

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: <input type="checkbox"/> Introduction to Anatomy, terms and terminology. <input type="checkbox"/> Regions of Body, Cavities and systems. Surface anatomy – musculo-skeletal, vascular, cardiopulmonary system <input type="checkbox"/> General Embryology. <input type="checkbox"/> Applied anatomy. Head and Neck: <input type="checkbox"/> Facial muscles-origin, insertion, actions, nerve supply <input type="checkbox"/> Temporomandibular joints-structure, types of movement | 15 |

| | | |
|--------------|--|-----------|
| | <p>Spine and Thorax:</p> <ul style="list-style-type: none"> □ Back muscles-superficial layer, deep muscles of back, their origin, insertion, action and nerve supply. □ Vertebral column-structure and development, structure and joints of vertebrae □ Applied Anatomy. | |
| II | <p>Musculoskeletal system:</p> <ul style="list-style-type: none"> □ 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. | 15 |
| III | <p>Nervous system:</p> <ul style="list-style-type: none"> □ 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 | <p>Sensory system:</p> <p>Structure and function of:</p> <ul style="list-style-type: none"> □ Visual system □ Auditory system □ Gustatory system □ Olfactory system □ Somato sensory system | 8 |
| TOTAL | | 48 |

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. & Derrickson B. (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 | Analyze 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 | 10 |
| TOTAL | | 30 |

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 µbiology 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 |
| 48 hours | 30 hours | 12 hours |

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

Course: Major

Subject Code: PHT242M102

Course Level: 100

Scheme of Evaluation: Theory & Practical

Total credits: 4

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

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 <input type="checkbox"/> Cell: morphology, Structure and function of cell organelles <input type="checkbox"/> Structure of cell membrane <input type="checkbox"/> Transport across cell membrane <input type="checkbox"/> Intercellular communication <input type="checkbox"/> Homeostasis | 15 hours |

| | | |
|---|--|----------|
| 2 | <p>Blood</p> <ul style="list-style-type: none"> <input type="checkbox"/> Introduction-composition & function of blood <input type="checkbox"/> W.B.C., R.B.C., Platelets formation & functions, Immunity <input type="checkbox"/> Plasma: composition, formation & functions, Plasma Proteins:-types &functions <input type="checkbox"/> Blood Groups- types , significance, determination <input type="checkbox"/> Hemoglobin <input type="checkbox"/> Haemostasis <input type="checkbox"/> Lymph-composition, formation, circulation &functions <p>Cardiovascular system</p> <ul style="list-style-type: none"> <input type="checkbox"/> Conducting system-components, impulse conduction <input type="checkbox"/> Heart valves <input type="checkbox"/> Cardiac cycle- definition, phases of cardiac cycle <input type="checkbox"/> Cardiac output- definition, normal value, determinants. Stroke volume and its regulation <input type="checkbox"/> Heart rate and its regulation <input type="checkbox"/> Arterial pulse, Blood pressure-definition, normal values, factors affecting blood pressure <input type="checkbox"/> Shock-definition, classification, causes and features <input type="checkbox"/> Basic idea of ECG <input type="checkbox"/> Cardiovascular changes during exercise | 15 hours |
| 3 | <p>Nerve Muscle Physiology</p> <ul style="list-style-type: none"> <input type="checkbox"/> Muscles- classification, structure, properties, Excitation contraction coupling | 5 hours |

| | | |
|---|---|----------|
| | <input type="checkbox"/> Motor unit, EMG, factors affecting muscle tension, <input type="checkbox"/> Muscle tone, fatigue, exercise <input type="checkbox"/> Nerve –structure and function of neurons, classification, properties <input type="checkbox"/> Resting membrane potential & Action potential their ionic basis <input type="checkbox"/> All or None phenomenon <input type="checkbox"/> Neuromuscular transmission <input type="checkbox"/> Ionic basis of nerve conduction <input type="checkbox"/> Concept of nerve injury & Wallerian degeneration <input type="checkbox"/> Synapses <input type="checkbox"/> Electrical events in postsynaptic neurons <input type="checkbox"/> Inhibition & facilitation at synapses <input type="checkbox"/> Chemical transmission of synaptic activity <input type="checkbox"/> Principal neurotransmitters. | |
| 4 | Nervous system <input type="checkbox"/> Introduction, central and peripheral nervous system, functions of nervous system <input type="checkbox"/> Reflexes- monosynaptic, polysynaptic, superficial, deep & withdrawal reflex <input type="checkbox"/> Sense organ, receptors, electrical & chemical events in receptors <input type="checkbox"/> Sensory pathways for touch, temperature, pain, proprioception & others <input type="checkbox"/> Control of tone & posture: Integration at spinal, brain stem, cerebellar, basal ganglion levels, along with their functions | 10 hours |

| | | |
|--|--|----------|
| | <input type="checkbox"/> Motor mechanism: motor cortex, motor pathway: the descending tract pyramidal & extra pyramidal tracts- origin, course, termination & functions. Upper motor neuron and lower motor neuron paralysis. <input type="checkbox"/> Spinal cord lesions- complete transection & hemisection of the spinal cord <input type="checkbox"/> Autonomic nervous system : features and actions of parasympathetic & sympathetic nervous system <input type="checkbox"/> Hypothalamus <input type="checkbox"/> Higher functions of nervous system <input type="checkbox"/> Special senses- eye, ear, nose, mouth | |
| | Total | 45 hours |

Text Books:

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

Reference Books:

1. Chaudhari, S.K , Concise Medical Physiology, New Central Agency, Calcutta, 4th Edition
2. Tortora & Grabowski, Harper Collins, Principles of Anatomy and Physiology,

Title of the Paper: HUMAN PHYSIOLOGY-I LAB

Course Code: PHT242M12

Course Objectives

The objective of this course is to learn about the various methods of checking pulse , blood pressure , respiratory rate and reflexes.

COURSE OUTLINE:

| MODULE | TOPICS & COURSE CONTENT | PERIODS |
|--------|----------------------------------|----------|
| 1 | Examination of pulse | 10 hours |
| 2 | Examination of Blood pressure | 10 hours |
| 3 | Examination of Respiratory rate. | 5 hours |
| 4 | Examination of Reflexes | 5 hours |

Text Book:

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

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

Reference Books:

1.Arthur, Guyton,Textbook of Medical Physiology, Mosby. 4th Edition.

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

| Distribution of Credits | | |
|-------------------------|-----------|-----------------------|
| Theory | Practicum | Experiential Learning |
| 45 hours | 30 hours | 15 hours |

Title of the Paper: Biomechanics-I(T&L)

Course: Major

Course Code: PHT242M103

Course Level: 100

Scheme of Evaluation: Theory + Practical

Total credits: 4

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

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:

| MOD ULE | TOPICS & COURSE CONTENT | PERI ODS |
|----------|--|-----------|
| 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. | 15 |

| | | |
|----|--|----|
| | <p>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.</p> <p>Friction</p> <p>Gravity - Definition, line of gravity, Centre of gravity</p> <p>Equilibrium - Supporting base, types, and equilibrium in static and dynamic state.</p> <p>Levers - Definition, function, classification, and application of levers in physiotherapy & order of levers with example of lever in human body</p> <p>Pulleys - system of pulleys, types, and application</p> <p>Elasticity - Definition, stress, strain, HOOKE'S Law</p> <p>Springs - properties of springs, springs in series and parallel, elastic materials in use.</p> | |
| II | <p>Muscular system:</p> <p>i) Definition, Properties of muscles,</p> <p>ii) Muscular contraction,</p> <p>iii) Structural classification,</p> <p>iv) Action of muscle in moving bone, direction of pull, angle of pull</p> <p>v) Functional classification</p> <p>Coordination of muscular system.</p> <p>Joint structures and functions:</p> <p>i) Joint design, Structure of Connective Tissue,</p> <p>ii) Properties of Connective Tissue, joint function, changes with disease, injury, immobilization, exercise, overuse.</p> | 10 |

| | | |
|-----|--|----|
| II | <p>Muscle Structure and function:</p> <p>Introduction of muscles, Elements of muscle structure, muscle tension, its classification and the factors effecting muscle function.</p> <p>Vertebral column:</p> <p>Introduction, General structures and function.</p> <p>Structure of the cervical spine and Function of cervical region: kinematics and kinetics.</p> <p>Structure of thoracic region: typical thoracic vertebra, intervertebral disc, articulations and the ligaments along with the Function of the thoracic spine: kinematics and kinetics.</p> <p>Structure of the lumbar region: typical lumbar vertebra, intervertebral disc, articulations, ligaments and fascia and function of Lumbar region: kinematics and kinetics.</p> <p>Structure of the sacral region: sacroiliac articulations, ligaments and symphysis pubis articulation. Functions include kinetics and kinematics.</p> <p>Muscles of vertebral column.</p> <p>The thorax and Chest wall:</p> <p>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.</p> <p>The Temporomandibular Joint:</p> <p>Introduction, structures of articular surfaces, disk, capsules & ligaments, upper and lower TMJ joints.</p> <p>Function of TMJ joint, and it's relation with cervical spine.</p> | 15 |
| III | <p>The Shoulder Complex:</p> <p>Introduction, components of the SC, AC, ST, GH joint.</p> <p>the integrated function of shoulder complex: ST and GH contributions. SC and AC contributions, structural functions and muscles function.</p> | 10 |

| | | |
|----|---|-------------|
| IV | <p>The Elbow complex:</p> <p>Introduction, articulating surfaces of humerus, radius and ulna, structure of joint capsule, ligament and muscles.</p> <p>Function of elbow joint ((humeroulnar and humeroradial articulation), structure of superior and inferior articulations.</p> <p>The Wrist and Hand Complex:</p> <p>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.</p> | 8 |
| | TOTAL | 48 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**Course Code: PHT242M113****COURSE OUTLINE:**

| MODULE | TOPICS & COURSE CONTENT | PERIODS |
|---------------|--|----------------|
| I | Goniometry for cervical, thoracic, and lumbar spine movements. | 10 |
| II | Goniometry for shoulder complex movements. | 10 |
| III | Goniometry for elbow joint movements | 5 |
| IV | Goniometry for wrist and hand movements along with proximal and distal-radioulnar joint. | 5 |
| | TOTAL | 30 hours |

Text Book:

1. Norkins &Levenge, 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 |

Paper I/Subject Name: Introduction to Indian Knowledge System - I

Subject Code: IKS992I101

L-T-P-C – 2-1-0-3

Credit Units: 3

Course Level: 100

Scheme of Evaluation: Theory (70%) + Continuous Evaluation (30%)

| CO | Contents | BT Level |
|------------|---|-----------------|
| CO1 | Recall the rich heritage of Indian knowledge systems | BT level 1 |
| CO2 | Describe the contribution of Indian knowledge systems to the world | BT level 2 |
| CO3 | Demonstrate knowledge of sociocultural and ethnolinguistic diversity that constitutes the soul of Bharatvarsha | BT level 2 |
| CO4 | Apply traditional knowledge and techniques in day-to-day life | BT level 3 |
| CO5 | Distinguish knowledge traditions that originated in the Indian subcontinent | BT level 3 |

| Module | Course Contents | Periods |
|---------------|---|----------------|
| | Introduction to Indian Knowledge Systems (IKS): -What is the Indian Knowledge System? -Definition of Indigenous/ Traditional Knowledge -Scope, and Importance of Traditional Knowledge. Ancient India- Bharat Varsha: -People of Ancient Bharat Varsha -Our great natural heritage: The great Himalayas and the rivers. - The civilizations of the Sindhu-Ganga valley, and the Brahmaputra valley. -Our coastal plains. -Our Nature: Forests and Minerals | 15 |
| I | | |

-Ancient Indian Traditional Knowledge and Wisdom about nature and climate.

Indian Heritage of Knowledge:

-Ancient Indian Knowledge: The Vedas and its components-the

Vedangas

15

-Ancient Indian books and treaties: The Sastras.

-The Great Indian Epics: The Ramayana and The Mahabharata,

-Epics and religious treaties of ancient Assam: Introduction to Madhav Kandali's Ramayan and Srimanta Sankardev's Dasam Skandha

Bhagavat of the Puranas.

-Ancient Traditional Knowledge-The Agamas

-The ancient Buddhist knowledge: Tripitaka: Vinaya, Sutta and

Abhidhamma Pitaka

Languages and language studies in India:

-What is linguistics?

-Script and Language

-Alphabet of the Indian languages Varnamala: Origin, Evolution, and phonetic features.

-Languages of India

-Important texts of Indian languages: Skills Siksha,

Expression/Pronunciation-Nirukta, Grammar-Vyakarana, Poetic rhythm- Chandas.

-Paninian Grammar: A Brief Introduction

Introduction to Fine Arts and Performing Arts of India:

-Ancient Indian classical music and dance forms:
The Science of Dramas-Natyasastra and the Science
of Music-Gandharva-Veda.

-Aesthetics in Indian Art and Culture.

-Folk music and traditional dance forms of the
Northeast.

Indian Science & Technology

-Ancient India's contribution to Mathematics-
Number System.

Algebra and Arithmetic, Geometry and
Trigonometry.

-Origin of Decimal system in India; nomenclature of
numbers in the

III

Vedas. Zero and Infinity. Sulba-sutras. Contribution
of Brahmagupta and Sridhar Acharya to
Mathematics. Important texts of Indian mathematics.

15

- Indian Astronomy: Planetary System.
Motion of the Planets. Velocity of Light.
Eclipse. Astronomy. Navagrahas.
Important works in Indian Astronomy.
Aryabhata and Nilakantha:

Contribution to Astronomical Studies

- Indian Metal Works: Mining
Techniques. Types of Metals. Tools
& Techniques for Metal Smelting
with examples.

Metalworks in pre-modern India: Special reference
to NE India.

Contribution of Ancient India to Health Sciences:

-Traditional Indigenous systems of medicines in
India:

- Ayurveda and Yoga: Elements of
Ayurveda: Gunas and Doshas, Pancha
Mahabhuta and Sapta-dhatu.

| | | |
|----|--|----|
| | -Concept of disease in Ayurveda | |
| IV | -Ayurvedic lifestyle practices: Dinacharya and Ritucharya. | 15 |
| | -Important Ayurvedic Texts | |
| | -Hospitals in Ancient India | |
| | <ul style="list-style-type: none"> -Ayurveda: Gift of India to the modern world. | |
| EL | The experiential learning sessions may include: | 30 |
| | <ul style="list-style-type: none"> Field Visits: Organizing visits to historical sites, museums, traditional craft centers, and other places relevant to Indian knowledge systems. Interactive Sessions: Engaging students in discussions with experts and practitioners in various fields of Indian knowledge systems to gain insights and practical knowledge. Online Lecture Series: Providing the students with online lectures by distinguished experts in the field of the Indian Knowledge System. Hands-on Activities: Providing opportunities for students to participate in activities related to traditional arts, crafts, music, dance, agriculture, etc., to understand the practical aspects of Indian knowledge systems. Practical Demonstrations: Conducting workshops or sessions to demonstrate traditional practices, such as yoga, Ayurveda, Vastu Shastra, etc., for the students. | |
| | Total | 90 |

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 | 10 |

| | | |
|------------|--|-----------|
| | proteins. Fibrous and globular proteins. Carbohydrates: Structure, 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 hyperthermophilic archaea 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 | 10 |

| | | |
|--------------|--|-----------|
| | Transport Chain, Oxidative phosphorylation. β -oxidation of fatty acids. | |
| 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 | - | - |

Type of Course: AEC (w.e.f. 2023-24) UG Programme

Course Code: CEN982A101

Course Title: CEN I: Introduction to Effective Communication

Total credits: 1 **Course level:** 100; **L-T-P** 1-0-0

Scheme of Evaluation: Theory and Practical

Course Objective: To understand the four major aspects of communication by closely examining the processes and outlining the most effective ways to communicate with interactive activities.

Course Outcomes: On successful completion of the course the students will be able to

| CO Level | Course Outcome | Blooms Taxonomy Level |
|-----------------|---|------------------------------|
| CO 1 | List the elements and processes that make for successful communication and recognise everyday activities that deserve closer attention in order to improve communication skills | BT 1 |

| | | |
|-------------|--|-------------|
| CO 2 | Contrast situations that create barriers to effective communication and relate them to methods that are consciously devised to overcome such hindrance | BT 2 |
| CO 3 | Apply language, gestures, and para-language effectively to avoid miscommunication and articulate one's thoughts and build arguments more effectively | BT 3 |

| Detailed Syllabus | | |
|--------------------------|--|----------------|
| Units | Course Contents | Periods |
| I | Introduction to Effective Communication <ul style="list-style-type: none"> • Listening Skills <ul style="list-style-type: none"> ○ The Art of Listening ○ Factors that affect Listening ○ Characteristics of Effective Listening ○ Guidelines for improving Listening skills | 5 |
| II | <ul style="list-style-type: none"> • Speaking Skills <ul style="list-style-type: none"> ○ The Art of Speaking ○ Styles of Speaking ○ Guidelines for improving Speaking skills ○ Oral Communication: importance, guidelines, and barriers | 5 |

| | | |
|------------|--|----------|
| III | <ul style="list-style-type: none"> • Reading Skills <ul style="list-style-type: none"> ○ The Art of Reading ○ Styles of Reading: skimming, surveying, scanning ○ Guidelines for developing Reading skills | 5 |
| IV | <ul style="list-style-type: none"> • Writing Skills <ul style="list-style-type: none"> ○ The Art of Writing ○ Purpose and Clarity in Writing ○ Principles of Effective Writing | 5 |

Texts:

1. Rizvi, M. Ashraf. (2017). *Effective Technical Communication*. McGraw-Hill.
2. Chaturvedi, P. D. and Chaturvedi, Mukesh. (2014). *Business Communication*. Pearson.
3. Raman, Meenakshi and Sharma, Sangeeta. (2011). *Technical Communication: Principles and Practice* (2nd Edition): Oxford University Press.

| Credit Distribution | | |
|----------------------------|------------------|--|
| Lecture/Tutorial | Practicum | Experiential Learning |
| 15 hours | - | 10 hours <ul style="list-style-type: none"> - Movie/ Documentary /Podcasts screening - Peer teaching |

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: 4

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

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: | | |
|--|---|--------------------------|
| No | SI 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: <input type="checkbox"/> Circulatory system – major arteries and veins of the body, structure of blood vessels <input type="checkbox"/> Heart structure, positions, chambers, valves, internal & external features <input type="checkbox"/> Blood supply to heart <input type="checkbox"/> Conductive system of heart Lymphatic system <input type="checkbox"/> Circulation, structure & functions <input type="checkbox"/> Lymph nodes | 15 |

| | | |
|--------------|---|-----------------|
| II | Respiratory system: <input type="checkbox"/> Structure of upper and lower respiratory tract Thorax: <input type="checkbox"/> Pleural cavities & pleura <input type="checkbox"/> Lungs and respiratory tree <input type="checkbox"/> Heart and great vessels <input type="checkbox"/> Diaphragm | 15 |
| III | Digestive system <input type="checkbox"/> Parts of digestive system <input type="checkbox"/> Abdominal cavity – divisions <input type="checkbox"/> Muscles of abdominal wall <input type="checkbox"/> Liver <input type="checkbox"/> Pancreas <input type="checkbox"/> Spleen <input type="checkbox"/> Alimentary canal <input type="checkbox"/> Gall bladder <input type="checkbox"/> 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: <input type="checkbox"/> Urinary system <input type="checkbox"/> Pelvic floor, innervations Kidney, Ureter, bladder, urethra Genital system – male and female o Reproductive system of male o Reproductive system of female Endocrine system: <input type="checkbox"/> Pituitary gland <input type="checkbox"/> Thyroid <input type="checkbox"/> Parathyroid | 8 |
| TOTAL | | 48 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. | 10 |
| TOTAL | | 30 |

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.

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 |
| 48 hours | 30 hours | 12 hours |

Title of the Paper: Human Physiology- II (Theory + Lab)

Course Level: 100

Subject Code: PHT242M202

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

Total credit: 4

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 <input type="checkbox"/> Digestion & absorption of nutrients <input type="checkbox"/> Gastrointestinal secretions & their regulation <input type="checkbox"/> Functions of Liver & Stomach. Respiratory System: Functional anatomy of respiratory tract, muscles of respiration, mechanism of inspiration and 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 | 15 |
| II | Endocrinology <input type="checkbox"/> Physiology of the endocrine glands – Pituitary, Pineal Body, Thyroid, Parathyroid, Adrenal, Gonads, Thymus, Pancreas. Hormones secreted by these glands, their classifications and functions. | 15 hours |
| III | Male & female reproductive system <input type="checkbox"/> Male - Functions of testes, pubertal changes in males, testosterone - action & regulations of secretion. <input type="checkbox"/> Female - Functions of ovaries and uterus, pubertal changes, menstrual cycle, estrogens and progesterone - action and regulation. | 10 hours |
| IV | Renal System <input type="checkbox"/> Physiology of kidney and urine formation <input type="checkbox"/> Glomerular filtration rate, clearance, Tubular function <input type="checkbox"/> Water excretion, concentration of urine-regulation of Na ⁺ , Cl ⁻ , K ⁺ excretion <input type="checkbox"/> Physiology of urinary bladder | 8 hours |

Text Books:

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

Reference Books:

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

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

Title of the Paper: Human Physiology- II LAB

Subject Code: PHT242M1212

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 Outline:

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

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 |
| 48 hours | 30 hours | 12 hours |

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

Course: Major

Subject Code: PHT242M203

Course Level: 100

Scheme of Evaluation: Theory + Practical

Total credits: 4

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

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. | 15 hours |
| II | The Knee: Structure of tibiofemoral joint, tibiofemoral joint function, patellofemoral joint. | 8 hours |
| III | The ankle and Foot complex: Ankle joint, the sub-talar joint, transverse tarsal joint, tarsometatarsal joint, metatarsophalangeal joint, Plantar arches. | 8 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. | 15 hours |
| | Total | 48 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 | 10 |
| III | Goniometry for Ankle Joint movements | 5 |
| IV | Normal and Abnormal posture, Parameters of gait, Abnormal gait | 5 |
| | TOTAL | 30 hours |

Text Book:

1. Norkins & Levenson, Joint Structure and Function- A Comprehensive Analysis
– F. A. Davis, 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 |

Semester – II**Paper II/Subject Name: Introduction to Indian Knowledge System - II****Subject Code: IKS992I201****L-T-P-C – 2-1-0-3****Credit Units: 3****Course Level: 100****Scheme of Evaluation: Theory (70%) + Continuous Evaluation (30%)**

| Credit Distribution (hours) | | |
|-----------------------------|---|----|
| L/T | P | EL |
| 60 | 0 | 30 |

COURSE OBJECTIVES:

This Foundation course is designed to present an overall introduction to all the streams of IKS relevant to the UG program. It would enable students to explore the most fundamental ideas that have shaped Indian Knowledge Traditions over the centuries.

COURSE OUTCOMES:

On completion of this course, students will be expected to –

| CO | Contents | BT Level |
|-----------------|--|------------|
| CO ₁ | Recall traditional Indian knowledge traditions constituting Indian culture | BT level 1 |
| CO ₂ | Summarize differences between classical literature in Sanskrit and other Indian languages | BT level 2 |
| CO ₃ | Compare knowledge traditions originating in NE India | BT level 2 |
| CO ₄ | Appreciate the contribution of Indian Knowledge Systems to the world | BT level 3 |

| Module | Course Contents | Periods |
|--------|---|---------|
| I | <u>Indian Classical Literature</u> Indian Classical Literature: A Brief Introduction. | 15 |

| | | |
|-----|---|----|
| | <p>- Ancient Indian Spritual Poetics-<i>Kavya</i>: Contribution of Kalidasa</p> <p><u>Diversity and Indian Culture:</u></p> <p>- Diversity and Indian Culture</p> <p>-Indigenous Faith and Religion</p> <p>-Preservation of culture and indigenous knowledge</p> <p><u>The Purpose of Knowledge</u></p> <p>- Understanding Self-Awareness and Spirituality.</p> <p>-Indian concept and purpose of Knowledge and Education</p> <p>- Understanding Spirituality and Materialism: <i>Para</i> and <i>Apara Vidya</i></p> | |
| II | <p><u>Methodology of Indian Knowledge System:</u></p> <p>- <i>Shruti</i> and <i>Smriti</i> traditions.</p> <p>-Intoduction to <i>Shastras</i>.</p> <p>-Manuscriptology: The art and science of documenting knowledge.</p> <p>- Repositories of ancient manuscripts with special reference to the Northeast India.</p> <p><u>Indian Architecture and Town Planning:</u></p> <p>- Introduction ancient Indian architecture.</p> <p>- <i>Sthapatya-Veda</i>: An Introduction</p> <p>- Indigenous tools & techniques for town planning & Temple Architecture. Lothal, Mohan Jo Daro.</p> <p>- Temple Art: Lepakshi Temple, Jagannath Puri Temple, Konark Sun Temple.</p> <p>- Vernacular architecture of Assam: Special reference to Brahmaputra Valley</p> | 15 |
| III | <p><u>Indian Agriculture:</u></p> <p>- Agriculture: Significance in Human Civilization.</p> <p>- Sustainable Agriculture.</p> <p>- Historical significance of agriculture and sustainable farming in India.</p> <p>- Step Cultivation of India: Special reference to Northeast India.</p> <p>- Wet rice cultivation of Assam.</p> <p><u>Indian Textiles:</u></p> <p>What is Textile?</p> | 15 |

| | | |
|----|--|----|
| | <ul style="list-style-type: none"> - Tradition of cotton and silk textiles in India. - The historical contribution of textile and weaving to the Indian economy. - Varieties of textiles and dyes developed in different regions of India with special reference to Northeast India | |
| IV | <p><u>Indian Polity and Economy:</u></p> <ul style="list-style-type: none"> - Understanding Kingdom and Chiefdom - Role of a king - The Indian idea of a well-organized polity and flourishing economy. - The <i>Chakravarti</i> System: Administrative System of Ancient Bharatvarsha. - Village administrative system: Northeast India. - <i>Arthashastra</i>: Brief synopsis <p><u>The outreach of Indian Knowledge System across Geographical Boundaries</u></p> <ul style="list-style-type: none"> - Indian Languages. - Scripts. - Linguistics. - Ayurveda. - Yoga and Meditation. - Textile - Decimal value place system-based arithmetic, Algebra and Astronomy | 15 |
| EL | <p>The experiential learning sessions may include:</p> <ul style="list-style-type: none"> • Field Visits: Organizing visits to historical sites, museums, traditional craft centers, and other places relevant to Indian knowledge systems. • Interactive Sessions: Engaging students in discussions with experts and practitioners in various fields of Indian knowledge systems to gain insights and practical knowledge. • Online Lecture Series: Providing the students with online lectures by distinguished experts in the field of the Indian Knowledge System. • Hands-on Activities: Providing opportunities for students to participate in activities related to traditional arts, crafts, music, dance, agriculture, etc., to understand the practical aspects of Indian knowledge systems. | 30 |

| | | |
|--|---|----|
| | • Practical Demonstrations: Conducting workshops or sessions to demonstrate traditional practices, such as yoga, Ayurveda, Vastu Shastra, etc., for the students. | |
| | Total | 90 |

TEXTBOOKS BOOKS:

1. Mahadevan, B., Bhat Vinayak Rajat, Nagendra Pavan RN. (2022), *Introduction to Indian Knowledge System: Concepts and Applications*. PHI Learning Private Ltd.
2. Mukul Chandra Bora, *Foundations of Bharatiya Knowledge System*. Khanna Book Publishing

REFERENCE BOOKS:

1. Baladev Upadhyaya, *Samskrta Śāstrom ka Itihās*, Chowkhambha, Varanasi, 2010.
2. D. M. Bose, S. N. Sen and B. V. Subbarayappa, Eds., *A Concise History of Science in India*, 2nd Ed., Universities Press, Hyderabad, 2010.
3. Astāngahrdaya, Vol. I, *Sūtrasthāna and Śārīrasthāna*, Translated by K. R. Srikantha Murthy, Vol. I, Krishnadas Academy, Varanasi, 1991.
4. Dharampal, *The Beautiful Tree: Indian Indigenous Education in the Eighteenth Century*, Dharampal Classics Series, Rashtrotthana Sahitya, Bengaluru, 2021.
5. J. K. Bajaj and M. D. Srinivas, *Indian Economy and Polity in Eighteenth century Chengalpattu*, in J. K. Bajaj ed., *Indian Economy and Polity*, Centre for Policy Studies, Chennai, 1995, pp. 63-84.

Type of Course: AEC (w.e.f. 2023-24) UG Programme

Course Code: CEN982A201

Course Title: CEN II: Approaches to Verbal and Non-Verbal Communication

Course level: 100, **Credits:** 1, **L-T-P:** 1-0-0, **Scheme of Evaluation:** Theory and Practical

Course Objectives

To introduce the students to the various forms of technical communication and enhance their knowledge in the application of both verbal and non-verbal skills in communicative processes. **Course Outcomes**

| On successful completion of the course the students will be able to: | | |
|--|---|-----------------------|
| CO Level | Course Outcome | Blooms Taxonomy Level |
| CO 1 | List the different types of technical communication, their characteristics, their advantages and disadvantages. | BT 1 |
| CO 2 | Explain the barriers to communication and ways to overcome them. | BT 2 |

| | | |
|-------------|--|-------------|
| CO 3 | Identify the means to enhance conversation skills. | BT 3 |
| CO 4 | Determine the different types of non-verbal communication and their significance. | BT 4 |

Detailed Syllabus

| Modules | Topics (if applicable) & Course Contents | Periods |
|----------------|---|----------------|
| I | Technology Enabled Communication Communicating about technical or specialized topics, Different forms of technology-enabled communication tools used in organizations Telephone, Teleconferencing, Fax, Email, Instant messaging, Blog, Podcast, Videos, videoconferencing, social media | 4 |
| II | Communication Barriers Types of barriers: Semantic, Psychological, Organisational, Cultural, Physical, Physiological, Methods to overcome barriers to communication. | 4 |
| III | Conversation skills/Verbal Communication Conversation – Types of Conversation, Strategies for Effectiveness, Conversation Practice, Persuasive Functions in Conversation, Telephonic Conversation and Etiquette Dialogue Writing, Conversation Control. | 4 |
| IV | Non-verbal Communication Body language- Personal Appearance, Postures, Gestures, Eye Contact, Facial expressions Paralinguistic Features-Rate, Pause, Volume, Pitch/Intonation/ Voice/Modulation, Proxemics, Haptics, Artifacts, Chronemics, | 4 |
| | Total | 16 |

Texts:

1. Rizvi, M. Ashraf. (2017). *Effective Technical Communication*. McGraw-Hill.
2. Chaturvedi, P. D. and Chaturvedi, Mukesh. (2014). *Business Communication*. Pearson.
3. Raman, Meenakshi and Sharma, Sangeeta. (2011). *Technical Communication: Principles and Practice* (2nd Edition): Oxford University Press.

Name of the paper: Behavioural Sciences -II

Course code: BHS982A202

CREDIT: 1

Course objectives: To increase one's ability to draw conclusions and develop inferences about attitudes and behaviour, when confronted with different situations that are common in modern organizations.

Course outcomes: On completion of the course the students will be able to:

CO 1: Develop an elementary level of understanding of culture and its implications on personality of people-BT 1

CO2: Understand the concept of leadership spirit and to know its impact on performance of employees- BT 2

CO3: Understand and apply the concept of Motivation in real life- BT 3

| Modules | Course Contents | Periods |
|----------------|---|----------------|
| I | Culture and Personality Culture: Definition, Effect, relation with Personality, Cultural Iceberg, Overview of Hofstede's Framework, Discussion of the four dimensions of Hofstede's Framework. | 4 |
| II | Attitudes and Values Attitude's definition: changing our own attitudes, Process of cognitive dissonance Types of Values, Value conflicts, Merging personal and Organisational values | 4 |
| III | Motivation Definition of motivation with example, Theories of Motivation (Maslow, McClelland's theory & Theory X and Y) | 4 |
| IV | Leadership Definition of leadership, Leadership continuum, types of leadership, Importance of Leadership, New age leaderships: Transformational & transactional Leadership, Leaders as role models. | 4 |
| Total | | 16 |

Text books:

- J William Pfeiffer (ed.) Theories and Models in Applied Behavioural Science, Vol 3, Management; Pfeiffer & Company
- Blair J. Kolasa, Introduction to Behavioural Science for Business, John Wiley & Sons Inc.
- Organizational Behaviour by Kavita Singh (Vikas publishers, 3rd Edition).

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 | <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • 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. ✓ 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. | 20 hours |
| 3 | <ul style="list-style-type: none"> • 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. | 20 hours |

| | | |
|---|---|----------|
| | <ul style="list-style-type: none"> • 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 | |
| 4 | <ul style="list-style-type: none"> • 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 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 | 40 hours |

| | | |
|--|--|----------|
| | ✓ 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.

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

Semester III

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: 2-1-2-4

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:

| MOD ULE | TOPICS & COURSE CONTENT | PERIODS |
|--------------------|---|----------------|
| I | <p>Physical Principles</p> <ol style="list-style-type: none"> 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 <ol style="list-style-type: none"> 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 <p>Effects of Current Electricity:</p> <ol style="list-style-type: none"> 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 <p>Electrical supply:</p> <ol style="list-style-type: none"> 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 | 10 |

| MOD ULE | TOPICS & COURSE CONTENT | PERIODS |
|------------|--|---------|
| | <p>Principles of Application</p> | |
| II | <p>Low Frequency Currents</p> <p>a. Introduction to direct, alternating & modified currents.</p> <p>b. Production of direct current –Physiological and therapeutic effects of constant current anodal and cathodal Galvanism, Ionization, and their application in various conditions.</p> <p>c. Iontophoresis – Principles of clinical application, indication, contraindication, precaution, operational skills of equipment & patient preparation.</p> <p>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.</p> <p>e. Modified direct current- Physiological and therapeutic effects, principles of clinical application, indications, contra indications, precautions, operational skills of equipment& patient preparation.</p> <p>6. Transcutaneous Electrical Nerve Stimulations (TENS): -</p> <p>a. Types of Low Frequency pulse widths, frequency & intensities used as TENS applications.</p> <p>b. Theories of pain relief by TENS</p> <p>c. Principle of clinical application, effects & users, indicators, contraindications, precautions, operational skills of equipment and patient preparation.</p> | 10 |

| MOD ULE | TOPICS & COURSE CONTENT | PERIODS |
|--------------------|--|-----------------|
| 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, (9th 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.

Title of the paper: Electrotherapy Lab I

Subject Code: PHT242M311

Course Outline:

Textbooks:

| 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. | 5 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. | 10 hours |
| | TOTAL | 30 hours |

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

2. Clayton's Electrotherapy, (9th 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 | 30 hours | 12 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: 2-1-2-4

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. | <p>1. Introduction to Exercise therapy, Principles, techniques and general areas of its application, Assessment & its importance.</p> <p>2. Description of Fundamental starting positions and derives position including joint positions, muscle work, stability, effects and uses.</p> <p>3. Introduction to Movements including analysis of joint motion, muscle work and Neuro muscular co-ordination.</p> <p>4. Classification of movements – Describe the types, technique of application, indications, contraindication, effects and uses of the following:</p> <p>a) Active movement</p> <p>b) Passive movement</p> <p>c) Active assisted movement</p> <p>d) Resisted movement</p> <p>5. To study the principles, techniques of application indication, Contraindication, precaution, effects and uses of Suspension Therapy.</p> | 15 |
| II. | <p>1. Manual muscle testing</p> <p>a) Principles and application techniques of Manual muscle testing.</p> <p>b) Testing position, procedure and grading of muscles of the upper limb, lower limb and trunk.</p> <p>2. Goniometry</p> <p>a) Principles, techniques and application of Goniometer.</p> <p>b) Testing position, procedure and measurement of R.O.M of the joints of upper limbs, lower limbs and trunk.</p> | 15 |
| III. | <p>Motor Learning</p> <p>1. Introduction to motor learning</p> <p>a) Classification of motor skills</p> <p>b) Measurement of motor performance.</p> <p>ii) Introduction to motor control</p> <p>a) Theories of motor control</p> <p>b) Applications</p> | 10 |

| | | |
|-------|---|----------|
| IV. | <p>1.Soft tissue manipulation(massage)</p> <p>a) History, various types of soft tissue manipulation</p> <p>b) Physiological effects of soft tissue manipulation on various systems</p> <p>2.Relaxation and Therapeutic Gymnasium</p> <p>a) Describe relaxation, muscle fatigue, muscle spasm and tension.</p> <p>b) Techniques of relaxation (local and general)</p> <p>c) Effects, Uses and clinical application</p> <p>d) Indication and Contraindication</p> <p>3.Therapeutic Gymnasium</p> <p>a) Setup of a gymnasium and its importance</p> <p>b) Various equipment's in the gymnasium</p> <p>c) Effects and uses of each equipment.</p> | 8 |
| 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 and Wilkins.

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. | 10 |
| 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 | 5 |
| | TOTAL | 30 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 | 30 hours | 12 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 | <p>1. Introduction: Concepts of diseases, classification of lesions</p> <p>2. Bacterial, viral and parasitic infections – a general outline.</p> <p>3. Cell injury:</p> <p>Reversible cell injury-types, sequential changes, cellular swellings, vacuolation, hyaline changes, mucoid changes.</p> <p>Irreversible cell injury-types of necrosis and gangrene, Autolysis.</p> <p>Pathology: Bone and Joints: Autoimmune diseases, septic arthritis, Osteomyelitis, osteomalacia, Gout, Rickets</p> <ul style="list-style-type: none"> • Skin- melanin pigment disorder, vitiligo, Alopecia, skin biopsy, leprosy, SLE, Scleroderma and Psoriasis • Central nervous system: CNS infections, vascular disorders <p>Respiratory system: COPD, pneumonia, pleuritis, lung collapse-atelectasis</p> | 15 |
| II | <p>Inflammation and repair-</p> <p>Acute inflammation-features, causes, vascular and cellular events, inflammatory cells and mediators</p> <p>Chronic inflammation-causes, types, classification, nonspecific and granulomatous with examples.</p> <p>Repair, wound healing by primary and secondary union, factors promoting and delaying the process. Healing in specific site including bone healing.</p> <p>Haemorrhage, shock-pathogenesis, types, morphologic changes embolism and thrombosis- formation, fate and effects.</p> <ul style="list-style-type: none"> • Haematology- bleeding and coagulation disorder, lymphoid and 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. | 15 |

| | | |
|-----|--|----|
| III | <p>Introduction and history of microbiology</p> <p>1. Micro-organisms</p> <p>a) Classification</p> <p>b) Shape and arrangement</p> <p>c) Special characteristics –spores, capsules, enzymes, motility, reproduction</p> <ul style="list-style-type: none"> • Pathology: Immunology – definition, classification • Immunity-natural and acquired • Allergy and hypersensitivity – types & examples. <p>Antigen-antibody reaction</p> | 15 |
| IV | <p>Disinfection and antiseptics –</p> <ul style="list-style-type: none"> • Definition • Types • Use in various aspects <p>Sterilization and asepsis -</p> <ul style="list-style-type: none"> • Definition • Uses • Types <p>Pathology:</p> <p>Outline of common pathogenic bacteria and diseases produced by them:</p> <p>Treatment and prevention of:</p> <p>A) Enteric Infections</p> <p>B) Anaerobic infections</p> <p>C) Urinary tract infections</p> <p>D) Leprosy, tuberculosis and miscellaneous infections</p> <p>E) Wound infections</p> <p>F) Sexually transmitted diseases</p> | 15 |

| | | |
|--|---|----------|
| | G) Hospital acquired infections <ul style="list-style-type: none"> • 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 | 60 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 – Goodman and Boissonnault – W.B

| Distribution of Credits | | |
|-------------------------|-----------|-----------------------|
| Theory | Practicum | Experiential Learning |
| 60 hours | - | - |

Title of the Paper: Basics of Sports Science

Course: Interdisciplinary Course

Subject Code: PHT242I303

Course Level: 200

Scheme of Evaluation: Theory

Total credits: 3

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

Course Objective:

The objective of the course is to promote health and performance, foster an understanding to improve athletic performance and promote overall health and wellness and to provide students the concept of sports science including analysis of sports performance, physical fitness and athletic health.

Course Outcomes:

| On successful completion of the course the students will be able to: | | |
|---|--|------------------------------|
| SI No | Course Outcome | Blooms Taxonomy Level |
| CO 1 | Apply various fitness tests to assess the general fitness of an individual. | BT 3 |
| CO 2 | Plan evidence-based recommendations for general population and obese people to optimize health and understand the role of nutrition in exercise performance and recovery. | BT 2 |
| CO 3 | Identify the various sports injury and on-site management of sports related injuries. | BT 3 |
| CO 4 | Explain the importance of physical fitness and well being in various population | BT 2 |

COURSE OUTLINE:

| MOD ULE | TOPICS & COURSE CONTENT | PERIODS |
|----------------|--|----------------|
| I | Classification of sports injuries and Principles of injury prevention. Common sports injuries- introduction, types & etiology, and management. Benefits and Risks associated with Physical Activity: sedentary behaviour and health, exercise related musculoskeletal injury, sudden cardiac death and risk of cardiac events, prevention of cardiac events. | 20 |
| II | Components of Physical Fitness: health related and skill related. Pre-participation examination and evaluation Sport and exercise associated emergency: on site management Principles of diagnosis: investigations including imaging. | 10 |
| III | Health related physical fitness training and interpretation. The type of exercises: aerobic and an aerobic. Principles and methods of fitness training. ACSM recommendation for general population. ACSM for individuals with overweight and obesity | 20 |

| | | |
|----|---|----------|
| | | |
| IV | Core stability exercises. Stretching for impaired mobility, Cardiovascular and respiratory symptoms during exercise. Principles of Recovery and the role of nutrition. | 10 |
| | TOTAL | 60 hours |

Textbook:

1. ACSM's Guidelines for Exercise Testing and prescription, 10th Edition
2. Peter Brukner and Karim Khan, Clinical Sports Medicine, McGraw Hill/ Australia, 5th edition.

Reference Book:

1. ACSM's Resources for the Exercise Physiologist, Lippincott Williams and Wilkins, 2nd Edition.

| Distribution of Credits | | |
|-------------------------|-----------|-----------------------|
| Theory | Practicum | Experiential Learning |
| 60 hours | - | - |

Course: AEC (w.e.f. 2023-24) UG Programme

Course Code: CEN982A301

Course Title: CEN III – Fundamentals of Business Communication

Course level: 200, **Total Credits:** 1, **L-T-P-C:** 1-0-0

Scheme of Evaluation: Theory and Practical

Course Objective: The aim of the course is to develop essential business communication skills, including effective writing, speaking, and interpersonal communication, to enhance professional interactions, collaboration, and successful communication strategies within diverse corporate environments.

Course Outcomes: On successful completion of the course the students will be able to:

| CO Level | Course Outcome | Blooms Taxonomy Level |
|-----------------|---|------------------------------|
| CO 1 | Define and list business documents using appropriate formats and styles, demonstrating proficiency in written communication for various business contexts. | BT 1 |
| CO 2 | Demonstrate confident verbal communication skills through persuasive presentations, active listening, and clear articulation to engage and influence diverse stakeholders. | BT 2 |

| | | |
|-------------|---|-------------|
| CO 3 | Apply effective interpersonal communication strategies, including conflict resolution and active teamwork, to foster positive relationships and contribute to successful organizational communication dynamics | BT 3 |
|-------------|---|-------------|

| Detailed Syllabus | | |
|--------------------------|--|----------------|
| Units | Course Contents | Periods |
| I | Business Communication: Spoken and Written <ul style="list-style-type: none"> • The Role of Business Communication • Classification and Purpose of Business Communication • The Importance of Communication in Management • Communication Training for Managers • Communication Structures in Organizations • Information to be Communicated at the Workplace • Writing Business Letters, Notice, Agenda and Minutes | 5 |
| II | Negotiation Skills in Business Communication <ul style="list-style-type: none"> • The Nature and Need for Negotiation <ul style="list-style-type: none"> ○ Situations requiring and not requiring negotiations • Factors Affecting Negotiation <ul style="list-style-type: none"> ○ Location, Timing, Subjective Factors • Stages in the Negotiation Process <ul style="list-style-type: none"> ○ Preparation, Negotiation, Implementation • Negotiation Strategies | 5 |

| | | |
|------------|--|----------|
| III | Ethics in Business Communication <ul style="list-style-type: none"> • Ethical Communication • Values, Ethics and Communication • Ethical Dilemmas Facing Managers • A Strategic Approach to Business Ethics • Ethical Communication on the Internet • Ethics in Advertising | 5 |
| IV | Business Etiquettes and Professionalism <ul style="list-style-type: none"> • Introduction to Business Etiquette • Interview Etiquette • Social Etiquette • Workplace Etiquette • Netiquette | 5 |

Texts:

1. *Business Communication* by Shalini Verma
2. *Business Communication* by P.D. Chaturvedi and Mukesh Chaturvedi
3. *Technical Communication* by Meenakshi Raman and Sangeeta Sharma

Title of the Paper: Behavioural Sciences -III

Course: AEC

Subject Code: BHS982A302

Course Level: 200

Scheme of Evaluation: Theory

Total credits: 1

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

CREDIT: 1

Course objectives: To increase one's ability to draw conclusions and develop inferences about attitudes and behaviour, when confronted with different situations that are common in modern organizations .To enable the students to understand the process of problem solving and creative thinking.

Course outcomes: On completion of the course the students will be able to:

- CO1: Understand the process of problem solving and creative thinking- BT
1 CO2: Develop and enhance of skills required for decision-making- BT 2

| Modules | Course Contents | Periods |
|----------------|---|----------------|
| I | Problem Solving Process Defining problem, the process of problem solving, Barriers to problem solving (Perception, Expression, Emotions, Intellect, surrounding environment) | 4 |
| II | Thinking as a tool for Problem Solving What is thinking: The Mind/Brain/Behaviour Critical Thinking and Learning: - Making Predictions and Reasoning. - Memory and Critical Thinking. - Emotions and Critical Thinking. | 4 |
| III | Creative Thinking - Definition and meaning of creativity, - The nature of creative thinking :Convergent and Divergent thinking, - Idea generation and evaluation (Brain Storming) - Image generation and evaluation. - The six-phase model of Creative Thinking: ICEDIP model | 4 |
| IV | Building Emotional Competence Emotional Intelligence – Meaning, components, Importance and Relevance Positive and Negative emotions Healthy and Unhealthy expression of emotions | 4 |
| Total | | 16 |

Text books:

- J William Pfeiffer (ed.) Theories and Models in Applied Behavioural Science, Vol 3, Management; Pfeiffer & Company
- Blair J. Kolasa, Introduction to Behavioural Science for Business, John Wiley & Sons Inc.

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 excretion of drugs. 3. Factors modifying drug response and its adverse effect. | 10 hours |

| | | |
|------------|---|----------|
| | 4. Drug allergy and idiosyncrasy 5. Drug toxicity 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 Pharmacotherapy'

| Distribution of Credits | | |
|--------------------------------|------------------|------------------------------|
| Theory | Practicum | Experiential Learning |
| 60 hours | - | - |

Semester IV

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: 2-1-2-4

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 various tissues of the body. 3. Therapeutic effects of heat, cold and electrical currents. 4. Physics of sound including characteristics and propagation | 10 |

| | | |
|-----|--|----|
| | | |
| II | <p>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.</p> <p>2. High frequency currents</p> <p>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</p> <p>b. High frequency sound waves (Ultrasound) – Production, biophysical effects, types, therapeutic effects, Techniques of application, indications, contraindications, precautions, operational skills, and patient preparation</p> | 10 |
| III | <p>1. Superficial heat- Paraffin wax bath, moist heat, electrical heating pads</p> <p>a. Mechanism of production</p> <p>b. Mode of heat transfer</p> <p>c. Physiological & therapeutic effects</p> <p>d. Indications, contraindications, precautions, operational skills of equipment & patient preparation</p> <p>2. Cryotherapy: Definition, Principle- Latent heat of fusion, Physiological & Therapeutics effects, Techniques of Applications, Indications & Contraindications, Dangers, and Methods of application with dosage.</p> <p>3. Contrast bath: Definition, Principle, Physiological & Therapeutics effects, Techniques of Applications, Indications & Contraindications, Dangers, and Methods of application</p> <p>4. Fluid therapy: Construction, Method of application, Therapeutic uses, Indications & Contraindications.</p> <p>5. Whirlpool bath: Methods of application, Therapeutic uses, Indications & Contraindication</p> | 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, (9th 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. | 10 |

| | | |
|-----|---|-----------------|
| | 3. To study a Microwave diathermy unit, its operation unit, its 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. | 10 |
| 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. | 5 |
| | TOTAL | 30 hours |

Textbooks:

- 1.Electrotherapy Explained: Principles &Practice – Low & Reed – Butterworth Heinemann.
- 2.Clayton’s Electrotherapy, (9th 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 | 30 hours | 12 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: 2-1-2-4

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. | <p>Therapeutic Exercises</p> <ol style="list-style-type: none"> 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. | 15 |
| II. | <p>Posture, Balance, Gait:</p> <ol style="list-style-type: none"> 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 . | 15 |
| III. | <p>Hydrotherapy</p> <ol style="list-style-type: none"> 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. | <p>Special Techniques</p> <ol style="list-style-type: none"> 1. Introduction to special mobilization & manipulation techniques, effects, indications & contraindications. 2. Conceptual framework, principle of proprioceptive neuromuscular facilitation (PNF) techniques, including indications, therapeutic effects and precautions. | 8 |

| | | |
|--------------|---|----------|
| | <p>3. Principles of traction, Physiological & therapeutic effects, classification, types, indications, contraindications, techniques of application, operational skills & precautions.</p> <p>4. Review normal breathing mechanism, types, techniques, indications, contraindications, therapeutic effects & precautions of breathing exercises.</p> <p>5. Group Therapy – Types, advantages & disadvantages.</p> <p>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.</p> <p>7. Introduction to Yoga – Conceptual framework, various “asanas”, the body- mind relationship, effects & precautions.</p> | |
| 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. | 10 |
| 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 | 30 hours |

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 | 30 | 12 |

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. | <p>1. Introduction of modes of transfer of communicable diseases & general preventive measures.</p> <p>2. Bacterial Diseases: Tuberculosis, Leprosy, Rheumatic fever, Tetanus, Typhoid fever, Diphtheria, Pneumonia, Bacillary Dysentery and Measles.</p> <p>3. Viral Diseases: Simplex and zoster, Varicella, Measles Mumps, Hepatitis B & C, AIDS & Influenza.</p> <p>4. Metabolic and Deficiency Diseases: Diabetes, Anemia, Vitamin & Nutritional, Deficiency diseases, diseases of the endocrine glands</p> | 15 |
| II | <p>. Diseases of Respiratory System: Asthma, Bronchitis, Massive collapse of lungs, Bronchiectasis Bronchial, Pneumonia, lung abscess, Emphysema, Empyema, Paralysis of diaphragm & vocal cords, chronic infection of larynx and trachea, Abnormalities of trachea, infraction of lungs, chronic passive congestion, chronic obstruction pulmonary disease, chest wall deformities.</p> <p>2. Diseases of Circulatory System: Thrombosis, 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, Pericarditis, Aortic Regurgitation, Cardiac Failure, coronary heart diseases, congenital heart malformation and its manifestation.</p> | 15 |
| III | <p>1. Disease of skin:-Characteristics of normal skin, abnormal changes, types of skin lesions.</p> <p>2. Conditions – Leprosy, Acne, Boil, Carbuncles, Impetigo, Infections of skin, Herpes, Urticaria, Psoriasis, Skin disorders associated with circulatory disturbances, Warts, Common Defects in Pigmentation Psoriasis Leucoderma, Fungal infections, Alopecia, Dermatitis Eczema, Skin – Allergies, Venereal.</p> | 10 |
| IV | <p>1. Diseases of Digestive System: Pharyngitis, spasm of the Oesophagus, Diverticulum stenosis, Gastric ulcer, Hematemesis, Pyloric stenosis, Dyspepsia, Vomiting, Diarrhoea, Duodenal ulcer etc.</p> <p>2. Diseases of Liver: Jaundice Cirrhosis of liver, Abscess of liver, Ascitis.</p> <p>3. Diseases of kidney :Polyuria, Hematuria, Uremia, Anuria, Nephritis, Urinary infections, Urinary calculi of application-</p> | 5 |

| | | |
|--------------|--------------|-----------------|
| | region wise. | |
| TOTAL | | 45 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

| Distribution of Credits | | |
|--------------------------------|------------------|------------------------------|
| Theory | Practicum | Experiential Learning |
| 45 | - | - |

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, Nephrectomy, Prostatectomy. 4. Thoracic surgeries: Thoracotomy - Definition, Types of Incisions with emphasis to the site of incision, muscles cut and complications. A) Lung surgeries: Pneumonectomy 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 | 15 |

| | | |
|-----|---|----|
| | <p>surgery.</p> <p>Transplant Surgery – Heart, Lung and Kidney – Indications, Physiological changes and Complications</p> <p>Chest Injuries, evaluation, management.</p> | |
| II | <p>Peripheral vascular diseases: Definition, Etiology, Clinical features, signs and symptoms, complications, management and treatment of following diseases:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Atherosclerosis <input type="checkbox"/> Arteriosclerosis <input type="checkbox"/> Buerger's <input type="checkbox"/> Raynauds <input type="checkbox"/> Varicose veins & DVT <p>Burns and Plastic Surgery:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Burns- causes, classification, ward management, post burn contractures, various Reconstructive & plastic surgeries <input type="checkbox"/> Skin grafts/flaps- pedicle/ Tube /Muscle flap Types, indications with special emphasis to burns/ wounds, ulcers, post surgical head, neck, face defects and reconstruction. <input type="checkbox"/> Hypertrophic scar & keloid – management c]-Principles of tendon transfers-with special emphasis to hand, foot & facial paralysis <p>Emergency Surgical Procedures: Indications, steps, post operative care:</p> <p>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</p> | 15 |
| III | <p>1. Anatomy of female genital system and pelvic floor</p> <p>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.</p> <p>3. Menopause: Physiology, Complications, Effect on Various systems, Management</p> <p>4. Uro-genital dysfunction</p> <ul style="list-style-type: none"> <input type="checkbox"/> Uterine prolapse – classification & management (Conservative /Surgical) <input type="checkbox"/> Cystocele, Rectocele, Enterocoele <input type="checkbox"/> Urinary Incontinence: Types, Causes, Assessment and Management. <input type="checkbox"/> Pelvic Inflammatory Diseases <input type="checkbox"/> Polycystic Ovarian Disease (PCOD) | 10 |
| IV | <p>1 Surgical Procedures involving child birth</p> <ul style="list-style-type: none"> <input type="checkbox"/> Caesarian Section <input type="checkbox"/> Episiotomy <p>Definition, Indications and Management of the following surgical procedures;</p> <ul style="list-style-type: none"> <input type="checkbox"/> Dilatation and Curettage | 5 |

| | | |
|--------------|--|-----------------|
| | <input type="checkbox"/> Hysterectomy – Total Abdominal and Vaginal Salphigectomy and oophorectomy Neoplasm of Female reproductive organs – surgical management <input type="checkbox"/> Menstrual cycle and its Disorders <input type="checkbox"/> Methods of family planning <input type="checkbox"/> Sterility – management <input type="checkbox"/> Multiple gestations | |
| TOTAL | | 45 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.

| Distribution of Credits | | |
|-------------------------|-----------|-----------------------|
| Theory | Practicum | Experiential Learning |
| 45 | - | - |

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 | 15 |

| | | |
|-----|---|----------|
| 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 | 15 |
| 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, Vibrios : 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 | 15 |
| 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 | 15 |
| | TOTAL | 60 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

| Distribution of Credits | | |
|-------------------------|-----------|-----------------------|
| Theory | Practicum | Experiential Learning |
| 60 | - | - |

Type of Course: AEC (w.e.f. 2023-24) UG Programme

Course Code: CEN982A401

Course Title: CEN IV: Business Communication: Concepts and Skills

Course level: 200,

Total Credits: 1, **L-T-P-C:** 1-0-0, **Scheme of Evaluation:** Theory and Practical

Course Objectives: This course is designed to enhance employability and maximize the students' potential by introducing them to the principles that determine personal and professional success, thereby helping them acquire the skills needed to apply these principles in their lives and careers.

Course Outcomes: After the successful completion of the course, the students will be able to

| CO Level | Course Outcome | Blooms Taxonomy Level |
|----------|---|-----------------------|
| CO 2 | Demonstrate understanding the importance of verbal and non-verbal skills while delivering an effective presentation. | BT 2 |
| CO 3 | Develop professional documents to meet the objectives of the workplace | BT 3 |
| CO 3 | Identify different life skills and internet competencies required in personal and professional life. | BT 3 |

| Detailed Syllabus | | |
|--------------------------|---|----------------|
| Units | Course Contents | Periods |
| I | Presentation Skills Importance of presentation skills, Essential characteristics of a good presentation, Stages of a presentation, Visual aids in presentation, Effective delivery of a presentation | 5 |
| II | Business Writing Report writing: Importance of reports, Types of reports, Format of reports, Structure of formal reports Proposal writing: Importance of proposal, Types of proposal, structure of formal proposals Technical articles: Types and structure | 5 |
| III | Preparing for jobs Employability and Unemployability, Bridging the Industry-Academia Gap Knowing the four- step employment process, writing resumes, Guidelines for a good resume, Writing cover letters Interviews: Types of interview, what does a job interview assess, strategies of success at interviews, participating in group discussions. | 5 |
| IV | Digital Literacy and Life Skills Digital literacy: Digital skills for the '21st century', College students and technology, information management using Webspace, Dropbox, directory, and folder renaming conventions. Social Media Technology and Safety, Web 2.0. Life Skills: Overview of Life Skills: Meaning and significance of life skills, Life skills identified by WHO: self-awareness, Empathy, Critical thinking, Creative thinking, Decision making, problem-solving, Effective communication, interpersonal relationship, coping with stress, coping with emotion. Application of life skills: opening and operating bank accounts, applying for PAN, Passport, online bill payments, ticket booking, gas booking | 5 |

Texts:

1. *Business Communication* by Shalini Verma References:
2. *Technical Communication* by Meenakshi Raman and Sangeeta Sharma

| Credit Distribution | | |
|---------------------|-----------|--|
| Lecture/Tutorial | Practicum | Experiential Learning |
| 15 hours | - | 10 hours <ul style="list-style-type: none"> - Movie/ Documentary screening - Field visits - Peer teaching - Seminars - Library visits |

Title of the Paper: Behavioural Sciences -III

Course: AEC

Subject Code: BHS982A402

Course Level: 200

Scheme of Evaluation: Theory

Total credits: 1

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

CREDIT: 1

Course objectives: To increase one's ability to draw conclusions and develop inferences about attitudes and behaviour, when confronted with different situations that are common in modern organizations.

Course outcomes: On completion of the course the students will be able to:

CO1: Understand the importance of individual differences- BT 1

CO2: Develop a better understanding of self in relation to society and nation- BT2

CO3: Facilitation for a meaningful existence and adjustment in society- BT 3

| Modules | Course Contents | Periods |
|----------------|---|----------------|
| I | Managing Personal Effectiveness Setting goals to maintain focus, Dimensions of personal effectiveness (self disclosure, openness to feedback and perceptiveness), Integration of personal and organizational vision for effectiveness, A healthy balance of work and play, Defining Criticism: Types of Criticism, Destructive vs Constructive Criticism, Handling criticism and interruptions. | 4 |
| II | Positive Personal Growth Understanding & Developing positive emotions, Positive approach towards future, Impact of positive thinking, Importance of discipline and hard work, Integrity and accountability, Importance of ethics in achieving personal growth. | 4 |
| III | Handling Diversity Defining Diversity, Affirmation Action and Managing Diversity, Increasing Diversity in Work Force, Barriers and Challenges in Managing Diversity. | 4 |
| IV | Developing Negotiation Skills Meaning and Negotiation approaches (Traditional and Contemporary) Process and strategies of negotiations. Negotiation and interpersonal communication. Rapport Building – NLP. | 4 |
| Total | | 16 |

Text books:

- J William Pfeiffer (ed.) Theories and Models in Applied Behavioural Science, Vol 3, Management; Pfeiffer & Company
- Blair J. Kolasa, Introduction to Behavioural Science for Business, John Wiley & Sons Inc.

SEMESTER V

Title of the Paper: Clinical Orthopedics-I

Course: Major

Subject Code: PHT242M501

Course Level: 300

Scheme of Evaluation: Theory

Total credits: 4

L-T-P-C: 3-1-0-4

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 limb 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. | 15 hours |

| | | |
|-----|--|----------|
| | <p>Anatomy of Bone, growth of a long bone, blood supply, Fracture healing, healing of cancellous bone, primary and secondary fracture healing.</p> <p>Treatment of fractures: General Principles, Management of open fracture.</p> <p>Splints and Traction</p> <p>Recent Advances in the treatment of fracture.</p> | |
| II | <p>Approach to a patient with limb injury: clinical examination, radiological examination, old fracture, approach to polytraumatic patient.</p> <p>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 ossificans.</p> <p>Injury to Joints: Dislocation and subluxation.</p> <p>Fractures in Children,</p> <p>PNI</p> <p>Treatment of Orthopaedic Disorders: Operative and non- operative methods.</p> <p>Injuries around the shoulder: anatomy, Fracture of clavicle, complication, subluxation and dislocation of SC joint, shoulder, fracture of neck, greater tubercle, shaft of humerus.</p> <p>Deformities and their management.</p> | 15 hours |
| III | <p>Injuries around elbow: Suptacondylar, lateral condyle, intercondyle, intercondyle, medial epicondyle fracture, fracture of olecranon, head and neck of radius, pulled elbow, and dislocation of elbow.</p> <p>Injuries of the forearm and wrist: fracture of forearm bones, Galeazzi, Colle's, Smith's, Barton's, Scaphoid and lunate fracture, lunate dislocation.</p> <p>Hand Injuries: Bannett's and Rolando fracture, metacarpal and phalanges fracture with dislocation, tendon and crush injury of the hand.</p> <p>Infections of the bones and Joints: Acute, secondary, chronic, Garre's Osteomyelitis, Brodie's abscess, Salmonella osteomyelitis, Septic and Gonococcal Arthritis, Leprosy.</p> <p>Tuberculosis of Bones and Joints: TB of spine, TB of hip, knee and other joints, TB osteomyelitis</p> | 15 hours |

| | | |
|-----------|--|----------|
| IV | Infection of the hand: classification, etiopathology, acute paronychia, apical subungual infection, terminal pulp space infection, middle & proximal volar space infection CTEV: etiology, pathoanatomy, clinical features and treatment. CDH and other congenital malformations. Miscellaneous Regional Diseases: Torticollis, Cervical rib, Coxa vara | 15 hours |
| | TOTAL | 60 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

| Distribution of Credits | | |
|--------------------------------|------------------|------------------------------|
| Theory | Practicum | Experiential Learning |
| 60 | - | - |

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: 3-1-0-4

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 | <p>Infections of brain and spinal cord Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Meningitis <input type="checkbox"/> Encephalitis <input type="checkbox"/> Neurosyphilis <input type="checkbox"/> Herpes <input type="checkbox"/> HIV infection <input type="checkbox"/> Poliomyelitis and Post-polio syndrome <input type="checkbox"/> Leprosy <input type="checkbox"/> Tetanus <p>Higher cortical, neuro psychological and neurobehavioral disorders</p> <ul style="list-style-type: none"> <input type="checkbox"/> Physiological nature of Epilepsy, classification, clinical features, investigations, medical& surgical management of following disorders – Non-epileptic attacks of childhood, Epilepsy in childhood, Seizures, and Epilepsy syndromes in adult. <input type="checkbox"/> Classification and clinical features of Dementia, Alzheimer's disease. <input type="checkbox"/> Causes & investigations of Coma, criteria for diagnosis of Brain death. <p>Cerebellar & Co-ordination disorders</p> | 15 hours |

| | | |
|-----|--|----------|
| | <input type="checkbox"/> Congenital Ataxia <input type="checkbox"/> Friedrich's Ataxia <input type="checkbox"/> Tabes dorsalis Disorders of lower cranial nerves & Special Senses Etiology, clinical features, investigations, and management of following disorders <input type="checkbox"/> Trigeminal neuralgia <input type="checkbox"/> Lesions in facial nerve: Facial palsy, Bell's palsy, Hemi facial spasm <input type="checkbox"/> Glossopharyngeal neuralgia <input type="checkbox"/> Lesions of Vagus, Spinal accessory nerve, Hypoglossal nerve. <input type="checkbox"/> Disorders of special senses | |
| II | Disorders of Myoneural Junction Etiology, classification, signs & symptoms, investigations, management, of following Disorders: <input type="checkbox"/> Myasthenia gravis <input type="checkbox"/> Eaton-Lambert syndrome Spinal cord Disorders <input type="checkbox"/> Functions of tracts :Definition, etiology, risk factors, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders: <input type="checkbox"/> Spinal Cord Injury , <input type="checkbox"/> Epidural abscess, <input type="checkbox"/> Transverse myelitis, <input type="checkbox"/> Spina bifida, <input type="checkbox"/> Conus medullaris syndrome <input type="checkbox"/> 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 ; <input type="checkbox"/> Cerebral palsy | 15 hours |

| | | |
|-----------|--|----------|
| | <input type="checkbox"/> Meningitis <input type="checkbox"/> Encephalitis <input type="checkbox"/> Hydrocephalus <input type="checkbox"/> Ataxia <input type="checkbox"/> Arnold-chiari malformation <input type="checkbox"/> Basilar impression & Cerebral malformations <input type="checkbox"/> Dandy walker syndrome <input type="checkbox"/> Down's syndrome <input type="checkbox"/> Floppy infant <input type="checkbox"/> GBS <input type="checkbox"/> Poliomyelitis <input type="checkbox"/> Epilepsy <input type="checkbox"/> Neural tube defects in Paediatrics <input type="checkbox"/> Muscular dystrophies & Neuropathy | |
| 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 | 15 hours |
| | TOTAL | 60 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.

| Distribution of Credits | | |
|-------------------------|-----------|-----------------------|
| Theory | Practicum | Experiential Learning |
| 60 | - | - |

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: 3-1-0-4

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: <ul style="list-style-type: none"> □ 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: <ul style="list-style-type: none"> □ Definition and scope. □ Principles of Epidemiology and Epidemiological methods, Uses of Epidemiology Socio-Economical & cultural issues related to morbidity: <ul style="list-style-type: none"> □ 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 <ul style="list-style-type: none"> □ 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: <ul style="list-style-type: none"> □ Occupational hazards, □ Occupational diseases □ Prevention of occupational diseases. □ Social security and other measures for the protection from occupational hazard accidents and diseases | 15 hours |
| III | Hospital waste management: <ul style="list-style-type: none"> □ Sources of hospital waste, Health hazards, Waste-management Disaster Management <ul style="list-style-type: none"> □ Natural and man-made disasters □ Disaster impact and response □ Relief phase □ Epidemiologic surveillance and disease control, nutrition, rehabilitation, disaster preparedness Health Education: <ul style="list-style-type: none"> □ Concepts, aims and objectives □ Approaches to health education □ Models of health education □ Contents of health education □ Principles of health education | 15 hours |

| | | |
|-----------|---|----------|
| | <input type="checkbox"/> Practice of health education | |
| IV | Addiction – Alcoholism, Psychosomatic disorders and Smoking Mental Health: <input type="checkbox"/> Characteristics of a mentally healthy person <input type="checkbox"/> Types of mental illness <input type="checkbox"/> Causes of mental ill health <input type="checkbox"/> Preventive aspects <input type="checkbox"/> Mental health services <input type="checkbox"/> Alcohol and drug dependence Nutrition and Health: <input type="checkbox"/> Nutritional problems in public health <input type="checkbox"/> Community nutrition programmes | 15 hours |
| | TOTAL | 60 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

| Distribution of Credits | | |
|-------------------------|-----------|-----------------------|
| Theory | Practicum | Experiential Learning |
| 60 | - | - |

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: 3-1-0-4

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 | <ul style="list-style-type: none">• 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 | 15 |
| II | <ul style="list-style-type: none">• 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, | 15 |
| III | <ul style="list-style-type: none">• Sampling: Probability and Non-Probability sampling- types and criteria for Selection.• Reliability and validity of Research tools.• Writing Research Report: Format and style. | 15 |
| IV | <ul style="list-style-type: none">• 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 | 15 |
| | TOTAL | 60 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 |
| 60 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: 3-1-0-4

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 | <p>Pelvic Fractures: classification, avulsion fracture of AIIS, acetabulum, sacrum and coccyx fracture, pathoanatomy, diagnosis, treatment and complication.</p> <p>Injuries around the Hip: Dislocations of hip (anterior, posterior and central), fracture neck of femur and intertrochanteric fracture.</p> <p>Fracture Shaft of Femur: pathoanatomy, diagnosis, treatment & complication.</p> <p>Injuries Around the knee: mechanism of knee injuries, condylar fracture, patella and tibial plateau fracture, ligament and meniscal injuries.</p> | 15 hours |
| II | <p>Injuries to the leg ankle and foot: Fracture of shafts of tibia & fibula, ankle injuries, fracture of calcaneum, talus, metatarsals and phalanges.</p> <p>Poliomyelitis, CP, Spina Bifida, disorders of muscles and peripheral neuropathies.</p> <p>PIVD: anatomy, pathoanatomy, diagnosis and treatment, Cervical disc prolapse.</p> <p>Approach to a patient with LBP.</p> | 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, hyperthyroidism, fluorosis. | 10 hours |
| IV | Arthritis: RA, ankylosing Spondylitis. 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, plantar 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: 3-1-0-4

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 | <p>Cerebra –vascular accidents Define: Stroke, TIA, RIA, Stroke in evolution, Lacunar infarct. Risk Factors, Causes, Investigations, Differential Diagnosis, Management- Medical & Surgical, Complications</p> <p>Movement Disorders Definition, etiology, risk factors, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, surgical management and complications of following disorders :</p> <ul style="list-style-type: none"> <input type="checkbox"/> Parkinson's disease <input type="checkbox"/> Dystonia <input type="checkbox"/> Chorea <input type="checkbox"/> Ballismus, <input type="checkbox"/> Athetosis <input type="checkbox"/> Tics, Myoclonus <input type="checkbox"/> Wilson's disease <p>Polyneuropathy <input type="checkbox"/> Classification of Polyneuropathies</p> <p><input type="checkbox"/> Causes, clinical features, management of GBS, Diabetic and Alcoholic Neuropathy</p> | 15 hours |
| II | <p>Disorders & Diseases of muscle <input type="checkbox"/> Classification, investigations, imaging methods, Muscle biopsy, management of muscle diseases, genetic counselling.</p> <p><input type="checkbox"/> Classification, etiology, signs & symptoms of Muscular dystrophy and Myotonic dystrophy</p> <p>Motor neuron diseases Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications of following disorders:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Amyotrophic lateral sclerosis <input type="checkbox"/> Spinal muscular atrophy <input type="checkbox"/> Hereditary bulbar palsy <input type="checkbox"/> Neuromyotonia <input type="checkbox"/> Post-irradiation lumbosacral polyradiculopathy. <p>Multiple Sclerosis Etiology, pathophysiology, classification, clinical signs & symptoms, investigations, differential diagnosis, medical management, and complications</p> | 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 amnesic 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: 2-1-2-4

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 | <input type="checkbox"/> Examination of Cardiovascular System <input type="checkbox"/> ECG – Normal & Variations due to ischemia & infarction <input type="checkbox"/> Stress Test <input type="checkbox"/> Interpretation of radiological & Biochemical Investigations & correlate the same with clinical findings. <input type="checkbox"/> Common Drugs used in cardiorespiratory conditions | 15 |
| II | DISEASES OF THE CARDIO-VASULAR SYSTEM <input type="checkbox"/> Definition, Etiology, Clinical Features, Complications, Management of the following Cardio-vascular diseases: <input type="checkbox"/> I.H.D.–Myocardial infarction <input type="checkbox"/> Valvular Heart Disease – i) Congenital ii) Acquired <input type="checkbox"/> Infective endocarditis, Myocarditis, cardiomyopathy Rheumatic Fever & Rheumatic Heart Disease Infective Endocarditis <input type="checkbox"/> PVD | 15 |
| III | <input type="checkbox"/> Examination of Respiratory System <input type="checkbox"/> Introduction of clinical examination–Breath sounds, X ray chest, ABG, PFT <input type="checkbox"/> Anatomical and Physiological differences between the Adult and Paediatric lungs. | 10 |
| IV | DISEASES OF THE RESPIRATORY SYSTEM <input type="checkbox"/> Patterns of Respiratory Diseases: Obstructive & Restrictive <input type="checkbox"/> Definition, Etiology, Clinical Features, Complications, Management of Diseases of the respiratory system <input type="checkbox"/> Obstructive Lung Diseases like Bronchitis, Emphysema, Bronchial Asthma, Cystic Fibrosis. <input type="checkbox"/> Restrictive lung diseases: Interstitial Lung Diseases Occupational lung diseases like Silicosis Asbestosis, Pneumoconiosis | 8 |

| MODULE | TOPICS & COURSE CONTENT | PERIODS |
|--------------|--|-----------------|
| | <input type="checkbox"/> Diseases of Pleura like Pleural Effusion, Pneumothorax, Hydro pneumothorax, Empyema. <input type="checkbox"/> Common Infectious diseases like Tuberculosis, Pneumonia, Lung Abscess, and Bronchiectasis. <input type="checkbox"/> Respiratory Failure: Definition, Types, Causes, Clinical Features, Diagnosis and Management | |
| TOTAL | | 48 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

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 |

| MODULE | TOPICS & COURSE CONTENT | PERIODS |
|---------------|---|-----------------|
| 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 | 10 hours |
| | TOTAL | 30 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
- 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 |
| 48 hours | 30 hours | 12 hours |

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

Subject Code: PHT242M604

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

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 | <p>Community Health</p> <ul style="list-style-type: none"> □ 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. <p>Rehabilitation in Amputation.</p> <ul style="list-style-type: none"> □ National policies for rehabilitation of disabled, architectural barrier for disabled and their modification. | 15 hours |
| II | <p>Women's Health</p> <ul style="list-style-type: none"> □ 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 | 15 hours |

| | | |
|------------|--|----------|
| | <input type="checkbox"/> Physical fitness in women during pregnancy & menopause. Geriatrics <input type="checkbox"/> Theories of Aging. <input type="checkbox"/> Anatomical and Physiological changes of aging in – <ul style="list-style-type: none"> • Musculoskeletal system. • CNS • CVS • RS • Metabolic, Endocrine, Immune System <input type="checkbox"/> Assessment in geriatrics <input type="checkbox"/> Role of physiotherapy in geriatrics fitness (Institutionalized & Community dwelling elders), Falls and its prevention in Geriatrics. <input type="checkbox"/> Rehabilitation for Parkinson's disease, Alzheimer's, stroke etc. | |
| III | Industrial Health I – Ability Assessment <input type="checkbox"/> Job description <input type="checkbox"/> Job demand analysis <input type="checkbox"/> Task analysis <input type="checkbox"/> Ergonomic evaluation <input type="checkbox"/> Injury prevention <input type="checkbox"/> Employee fitness programme II – Disability management – <input type="checkbox"/> Acute case <input type="checkbox"/> Concept of functional capacity assessment <input type="checkbox"/> Work conditioning <input type="checkbox"/> Work hardening III – Environmental stress in the industrial area a. Occupational Hazards: <input type="checkbox"/> Physical agents- Heat, cold, light, noise, Vibration, U.V. radiation, Ionizing radiation, <input type="checkbox"/> Chemical agents-Inhalation, local action & ingestion, <input type="checkbox"/> Mechanical hazards- overuse, fatigue. <input type="checkbox"/> Psychological hazards – monotonic, dissatisfaction in job, anxiety of work completion with quality, mechanical stress in various occupations for eg. <input type="checkbox"/> <input type="checkbox"/> Sedentary table work –eg. in executives, clerk, <input type="checkbox"/> <input type="checkbox"/> Inappropriate seating arrangement- eg. vehicle drivers <input type="checkbox"/> <input type="checkbox"/> Constant standing- eg. watchman, Defense forces, surgeons, | 10 hours |

| | | |
|-----------|--|----------|
| | <input type="checkbox"/> <input type="checkbox"/> Over- eg. exertion in laborers. | |
| IV | <p>Solidarity and cooperation</p> <ul style="list-style-type: none"> <input type="checkbox"/> Solidarity in health care & Physiotherapy <input type="checkbox"/> Ethical perspective <ul style="list-style-type: none"> o Solidarity as instrumental value o Solidarity as moral value <input type="checkbox"/> Threats to solidarity in present-day societies <p>Social responsibility and health, Sharing of benefits</p> <ul style="list-style-type: none"> <input type="checkbox"/> Highest attainable standard of health as a fundamental human right <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> • Access to essential health services • The protection of vulnerable populations • Providing health care services across national boundaries <input type="checkbox"/> Sharing of benefits <ul style="list-style-type: none"> o Models of benefit-sharing agreements <ul style="list-style-type: none"> • 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 | 8 hours |
| | Total | 48 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. | 10 |
| III | Physiotherapy Rehabilitation with ergonomic interventions in various conditions seen in community. | 5 |
| IV | Different National and International schemes & policies applicable for different community. | 5 |
| TOTAL | | 30 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 |
| 48 hours | 30 hours | 12 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: 2-1-2-4

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. | <p>Fractures and dislocations of the spine, extremities – classification, management & complications.</p> <ul style="list-style-type: none"><input type="checkbox"/> PT assessment and management of upper limb fractures and dislocations.<input type="checkbox"/> PT assessment and management of lower limb fractures and dislocations, including pelvis.<input type="checkbox"/> PT assessment and management of spinal fractures<input type="checkbox"/> PT management in complications - early and late - shock, compartment syndrome, VIC, fat embolism, delayed and mal-union, RSD, myositis ossificans, AVN, pressure sores etc.<input type="checkbox"/> Principles of PT management in fractures - Guidelines for fracture treatment during immobilization and guidelines for treatment after immobilization period. | 15 |
| II. | <p>Physiotherapy Management of Deformities</p> <ul style="list-style-type: none"><input type="checkbox"/> Congenital: CTEV, CDH, Torticollis, pes planus, pes cavus and other common deformities.<input type="checkbox"/> Acquired: scoliosis, kyphosis, coxa vara, genu varum, valgum and recurvatum. <p>Infectious diseases of the bone & joints</p> <ul style="list-style-type: none"><input type="checkbox"/> Osteomyelitis – acute and chronic<input type="checkbox"/> Septic arthritis and Pyogenic arthritis<input type="checkbox"/> TB spine and major joints - knee and hip | 15 |
| III. | <p>Degenerative and Inflammatory Conditions</p> <ul style="list-style-type: none"><input type="checkbox"/> Osteoarthritis - emphasis mainly on knee, hip and hand<input type="checkbox"/> Rheumatoid Arthritis<input type="checkbox"/> Ankylosing spondylitis<input type="checkbox"/> Gout<input type="checkbox"/> 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. | 8 |
| TOTAL | | 48 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, <ul style="list-style-type: none">• Fractures and dislocations of the spine• Fractures of extremities | 10 |
| II. | <ul style="list-style-type: none">• Physiotherapy Management of Deformities• Infectious diseases of the bone & joints | 5 |
| III. | Evaluation and treatment planning of, <ul style="list-style-type: none"><input type="checkbox"/> Osteoarthritis - emphasis mainly on knee, hip and hand<input type="checkbox"/> Rheumatoid Arthritis<input type="checkbox"/> Ankylosing spondylitis<input type="checkbox"/> Gout<input type="checkbox"/> Perthes disease | 5 |

| | | |
|--------------|---|----------|
| IV. | Sports injuries Sports-specific fitness training Cardio pulmonary Resuscitation; Splinting, Stretcher use— Handling and transfer Physical Fitness Tests | 10 |
| TOTAL | | 30 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 |
| 48 hours | 30 hours | 12 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: 2-1-2-4

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. | 15 |
| 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 | 15 |
| 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- <ul style="list-style-type: none">• 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 | 8 |
| TOTAL | | 48 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-I Lab**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 | 10 |
| TOTAL | | 30 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 |
| 48 hours | 30 hours | 12 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: 2-1-2-4

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. | 15 |

| MODULE | TOPICS & COURSE CONTENT | PERIODS |
|--------------|--|-----------------|
| III | 1. Physiotherapy techniques to increase lung volume <input type="checkbox"/> Positioning and Mobilization <input type="checkbox"/> Breathing exercises <input type="checkbox"/> Neurophysiological Facilitation of Respiration <input type="checkbox"/> Mechanical aids – Incentive Spirometer, CPAP, IPPB, BiPAP 2. Physiotherapy techniques to decrease work of breathing <input type="checkbox"/> Energy Conservation and Positioning <input type="checkbox"/> Breathing re-education – Breathing control techniques 3. Physiotherapy techniques to clear secretions <input type="checkbox"/> Hydration, Humidification & Nebulization <input type="checkbox"/> Mobilization and Breathing exercises <input type="checkbox"/> Postural Drainage <input type="checkbox"/> Manual techniques – Percussion, Vibration and Shaking, Rib Springing <input type="checkbox"/> ACBT, Autogenic Drainage <input type="checkbox"/> Mechanical Aids – PEP, Flutter, Acapella <input type="checkbox"/> Facilitation of Cough and Huff & Suctioning | 15 |
| 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 | | 45 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:

| 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 |

Text Books:

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

Reference Books:

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 |
| 45 hours | 30 hours | 15 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. | <p>Introduction: Introduction to Prosthetics, definitions of various terminologies, Historical development in Lower Extremity Prosthetics in India and abroad.</p> <p>Prosthetic Feet: Various types of Prosthetic feet. Conventional foot. Rocker, SACH foot, modified SACH Foot. Jaipur Foot,</p> <p>Partial Foot: Various types of Partial foot prosthesis. Biomechanics of Partial foot prosthesis, uses of Partial foot prosthesis, Fabrication Technique for partial foot prosthesis.</p> <p>Syme's: Various types of Symes Prosthesis, Prosthetic Components.</p> | 15 |
| II | <p>Knee Joints: Different types of Endoskeletal and exoskeletal knee joints -</p> <p>Hip Joints: For above knee as well as for hip disarticulation/ hemi- pelvectomy – all types of hip joints especially single axis and Swivel type.</p> <p>Through Knee Prosthesis: Various types of through knee prosthesis - Through knee prosthetic Components. Materials used for through knee prosthesis.</p> | 15 |
| III | <p>General: Introduction to Orthotics, types, definitions of various terminologies, History of Orthoses in India and abroad. Various materials used in Orthotics.</p> <p>AFO (Ankle foot orthosis): Conventional AFO-, Plastic AFO (custom moulded), Articulated A.F.O & various types of ankle joints</p> <p>Club foot Orthosis: Orthotic management of CTEV, Ankle support Orthotic management of Anesthetic Foot. Orthosis for the management of fracture below knee.</p> | 15 |
| IV | <p>Above knee Orthotics: Types of knee & Hip joints</p> <p>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</p> | 15 |
| TOTAL | | 60 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

Experiential Learning: Field visits to institutions of Orthotics & Prosthetics.

| Distribution of Credits | | |
|-------------------------|-----------|-----------------------|
| Theory | Practicum | Experiential Learning |
| 60 hours | - | 30 hours |

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: 2-1-2-4

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. | <p>Orthopedic surgeries: Pre and post-operative PT assessment, goals, precautions and PT management of the following surgeries such as:</p> <ul style="list-style-type: none"> ○ Arthroplasty: THR, TKR, Reverse shoulder arthroplasty ○ Arthrodesis ○ Osteotomy <p>General Rehabilitation Principles in injuries:</p> <ul style="list-style-type: none"> ○ Shoulder ○ Lateral and medial epicondylitis ○ Adhesive capsulitis ○ Ankle sprains | 10 |

| | | |
|-------------|--|-----------|
| II. | <p>Spinal conditions</p> <p>PT assessment, aims, and conservative & surgical management and home program of the following conditions -</p> <ul style="list-style-type: none"> <input type="checkbox"/> Cervical spondylosis <input type="checkbox"/> Lumbar spondylosis <input type="checkbox"/> Intervertebral disc prolapse <input type="checkbox"/> Spinal canal stenosis <input type="checkbox"/> Spondylolisthesis <input type="checkbox"/> Spondylolysis <input type="checkbox"/> Coccydynia <input type="checkbox"/> Sacralisation <input type="checkbox"/> Lumbarisation <input type="checkbox"/> Sacro-iliac joint dysfunction | 15 |
| III. | <p>Amputation</p> <ul style="list-style-type: none"> <input type="checkbox"/> Definition, levels, indications, types, PT assessment, aims, management pre and post-operatively. <input type="checkbox"/> PT management with emphasis on stump care and bandaging. <input type="checkbox"/> Prosthesis Prescription and Training <p>Traction</p> <ul style="list-style-type: none"> <input type="checkbox"/> Effect, Types, Modes, Indications, Contraindications, Dosage <p>Peripheral Joints</p> <p>PT assessment, aims, and conservative & surgical</p> | 15 |

| | | |
|--------------|---|----------|
| 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. | 5 |
| TOTAL | | 45 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. | <ul style="list-style-type: none">• Evaluation for Orthopaedic surgeries• General Rehabilitation Principles in injuries | 5 |
| II. | <ul style="list-style-type: none">• Evaluation and treatment planning for Spinal conditions• Special tests for various conditions | 10 |
| III. | <ul style="list-style-type: none">• Musculoskeletal conditions of the hands• Musculoskeletal conditions of the feet | 5 |
| IV. | <ul style="list-style-type: none">• Sports-specific fitness training• Cardio pulmonary Resuscitation; Splinting, Stretcher use–Handling and transfer• Fatigue Assessment | 10 |
| TOTAL | | 30 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 |
| 45 hours | 30 hours | 15 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: 2-1-2-4

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 | 15 |
| 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 | 15 |
| 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 | 5 |
| 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 | 10 |
| TOTAL | | 45 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 | 10 |
| TOTAL | | 30 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 |
| 45 hours | 30 hours | 15 hours |

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.

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.