UNIVERSITI TEKNOLOGI MARA

PHT412: FUNCTIONAL ANATOMY

Course Name (English)	FUNCTIONAL ANATOMY APPROVED
Course Code	PHT412
MQF Credit	3
Course Description	This course will introduce the students to the foundations of human body anatomical structures, functions and basic mechanics of movements which underpin physiotherapeutic practices. The course syllabus will enhance the ability of students to palpate human body structures and apply the acquired knowledge and understanding in human movements. The foundation of anatomy and biomechanics are integrated and applied to analysis movement that are involved in daily functions.
Transferable Skills	1. Knowledge 2. Cognitive 3. Practical Skills
Teaching Methodologies	Lectures, Practical Classes, Tutorial, Small Group Sessions
CLO	CLO1 Explain the concepts of osteokinematic and arthrokinematic of the joints, plane of motions in human body. CLO2 Analyse the joint movements, mechanics and pathomechanics of muscle actions in upper and lower extremities, head, and axial body in human. CLO3 Display competency in palpation techniques of bony landmarks, joints, muscles, and other soft tissues in human body
Pre-Requisite Courses	No course recommendations

Topics
1. Musculoskeletal system as the basis of human motion 1.1) 1.1 Bones, articulations, orientation of body and fundamental movements 1.2) 1.2 Osteokinematics and arthrokinematics of the joints
2. Introduction to palpation 2.1) 2.1 Definition of palpation 2.2) 2.2 Objectives of palpation 2.3) 2.3 Guidelines of muscle palpation
3. The upper limbs 3.1) 3.1 Shoulder girdle , arm and forearm , wrist and hand 3.2) 3.1.1Palpation of bones, bony landmarks, joints, ligaments and muscles of the upper limbs 3.3) 3.1.2Mechanics and pathomechanics of muscle activity 3.4) 3.1.3Analysis of forces and motion during activity
4. The lower limbs 4.1) .1 Pelvis, thigh and leg, foot 4.2) 4.1.1 Palpation of bones, bony landmarks, joints, ligaments and muscles of the lower limbs 4.3) 4.1.2Mechanics and pathomechanics of muscle activity 4.4) 4.1.3Analysis of forces and motion during activity
5. Musculoskeletal functions within the head 5.1) 5.1 Palpation of bones, bony landmarks, joints, ligaments and muscles of the lower limbs 5.2) 5.2 Mechanics and pathomechanics of the muscles of the face and eyes , 5.3) vocalization and swallowing 5.4) 5.3 Structure and function of the articular structures of the TMJ 5.5) 5.4 Mechanics and pathomechanics of the muscle of the TMJ 5.6) 5.5 Analysis of the forces on the TMJ during activity

6. The axial body (face, cranium, neck and trunk) 6.1) 6.1 Palpation of bones, bony landmarks, joints, ligaments and muscles of the axial body 6.2) 6.2 Mechanics and pathomechanics of the joints 6.3) 6.3 Analysis of the forces on the spine during activity 6.4) 6.4 Loads sustained by the spine 6.5) 6.5 Analysis of skeletal and muscles of respiration
7. Motion 7.1) 7.1 Conditions of linear motion 7.2) 7.1.1Nature of forces 7.3) 7.1.2Newton's law of motion 7.4) 7.1.3Forces that modify motion 7.5) 7.1.4Work, energy and power 7.6) 7.1.5Analysis of linear motion
8. Conditions of rotary motion 8.1) 7.2.1Rotary force 8.2) 7.2.2Lever system 8.3) 7.2.3Newton's law and rotational equivalents 8.4) 7.2.4Centripetal and centrifugal forces 8.5) 7.2.5Analysis of rotary motion
9. The center of gravity and stability 9.1) 8.1Placement of center of gravity in human body 9.2) 8.2Principles of stability and equilibrium 9.3) 8.3Finding center of gravity in human body 9.4) 8.4Application of center of gravity and stability in functional and sports specific activities

Assessment Breakdown	%
Continuous Assessment	100.00%

Details of Continuous Assessment

Assessment Type	Assessment Description	% of Total Mark	CLO
Assignment	Assignment	30%	CLO2
Final Test	Theory test	20%	CLO1
Practical	Practical test 1	25%	CLO3
Practical	Practical test 2	25%	CLO3

Reading List

Recommended Text

- **Paul Jackson Mansfield,Donald A. Neumann 2018, *Essentials of Kinesiology for the Physical Therapist Assistant*, Mosby [ISBN: 9780323544986]**
- **Richard Drake,A. Wayne Vogl,Adam W. M. Mitchell 2019, *Gray's Anatomy for Students*, Elsevier [ISBN: 9780323393041]**
- **Michael Masaracchio,Chana Frommer 2021, *A Clinical Guide to Surface Palpation*, Human Kinetics [ISBN: 9781492596684]**

Reference Book Resources

- **Joseph E. Muscolino 2022, *The Muscle and Bone Palpation Manual with Trigger Points, Referral Patterns and Stretching*, 2 Ed., Mosby [ISBN: 9780323761369]**
- **Carole A. Oglesby,Kim Henige,Douglas W. McLaughlin,Belinda Stillwell 2021, *Foundations of Kinesiology*, Jones & Bartlett Learning [ISBN: 9781284232820]**

Article/Paper List

This Course does not have any article/paper resources

Other References

This Course does not have any other resources