THE UNIVERSITY OF BRITISH COLUMBIA

Land Acknowledgement

We respectfully acknowledge the Syilx Okanagan Nation and their peoples, in whose traditional, ancestral, unceded territory UBC Okanagan is situated.

Health & Exercise Sciences 420 001 (3 credits)
Advanced Functional Anatomy
2025/26 W2

Instructor: Dr. Gregory duManoir PhD
Office: ART 138
Office phone: 250.807.9958
Office Hours: Short Meeting Long Meeting
M 13:00-14:00
R 15:00-16:00
email: greg.dumanoir@ubc.ca

Class times:	**Lecture**	T	17:00 – 18:30	SCI 333
		R	17:00 – 18:30	SCI 333
	Lab L01	W	08:00 – 10:00	UCH 010
	Lab L02	F	08:00 – 10:00	UCH 010
	Lab L03	F	10:00 – 12:00	UCH 010
	Lab L04	F	12:00 – 14:00	UCH 010

Teaching Assistants:

1. Cori Calkins cori.calkins@ubc.ca
2. Lani Campbell lani03c@student.ubc.ca

Academic Calendar Entry

BHES 420 (3) Advanced Functional Anatomy

Advanced aspects of human anatomy in relation to functional movement, exercise and musculoskeletal pathology with special attention to developmental, evolutionary and clinical perspectives including movement analysis, and design and implementation of exercises to address muscle imbalances and movement in healthy and clinical populations. [3-2-0]

Prerequisite: HES 120, HES 320.

Course Format

This course combines both lecture and laboratory sessions to achieve the learning objectives. The lectures will explore the sequential function of key anatomy structures as well as advanced concepts and principles underpinning the study of human movement. Special topics on developmental, evolutionary and comparative anatomy, manual muscle testing, movement analysis and exercise selection will be included. Laboratory activities specifically address manual muscle testing for selected joint complexes and movement patterns, palpation, land marking and identification of specific anatomical structures on human subjects. In addition, the practical application of movement sequencing and exercise selection to address muscle imbalances in healthy and clinical populations will be explored.

Course Overview, Content, and Objectives

The course is designed to provide advanced study on the sequential actions of the anatomical structures of the human body to generate functional movement in healthy and clinical populations. Lectures and laboratories emphasize the anatomical relationship and sequencing in the trunk and extremities as they relate to human movement. Special attention is given to exercise selection to address movement imbalances. The learning objectives are to:

- To progress students understanding of human function, with a particular emphasis on muscle activation and sequencing
- To explore how alterations in the structure of the human body influences function
- To develop corrective exercise strategies to improve human movement in healthy and clinical populations

Learning Outcomes

By the end of this course successful students will be able to:

1. Apply anatomical knowledge in evaluating functional movement of the trunk and limbs
2. Analyze the factors that contribute to mobility, stability and limit movement of each of the joints of the trunk, upper limb and lower limbs
3. Apply foundational anatomy principles necessary to explain individual joint complexes and their independent and composite functions in posture and movement
4. Integrate functional anatomy knowledge with other exercise science subdisciplines, and apply to fitness, sport and workplace contexts
5. Develop skills in manual muscle testing for the development of exercise interventions to improve human movement in healthy and clinical populations.
6. Explain and classify results from anthropometric, flexibility and posture testing, and present a summary of actions required

Evaluation Criteria and Grading

	Description	Date	Value
Lecture			**65%**
Participation	LO1-LO3 Small stakes quizzes on Canvas 60-minute time limit	Due prior to the start of class See Canvas for details	**10%** 10 x 1%
Midterm Examination	LO1-LO3 consists of MC/Short answer	Thursday, February 12	**25%**
Final Examination	LO1-LO3 consists of MC/Short answer	Final Exam Period	**30%**
Laboratory			**35%**
Movement Analysis & Correction Case Study	Case analysis and Interpretation Group LO1-LO6	Week of February 9	**10%**
Movement Analysis & Correction Case Study	Manual Muscle Testing Individual LO1-LO6	Week of March 9	
Movement Analysis & Correction Case Study	Intervention Presentation Group LO1-LO6	Week of March 16 Week of March 30	**15%**

As per the HES Policies, ***you must pass both the lab and lecture components of a course*** to receive a passing grade in that course. If you happen to fail one of these components, even if your total grade is above 50%, then your final grade will be 49%

Recommended Readings

Drake R (2023) Gray's Anatomy for Students. 5TH Edition. Elsevier (older versions are acceptable)

Conroy VM, Murray BN, Alexopulos QT and McCreary J (2024) Kendall's Muscles, 6e: Testing and Function with Posture and Pain.

Biel A (2010) Trail Guide to the Body: A hands-on guide to locating muscles, bones and more Fourth Edition. Books of Discovery. (an excellent book for palpation and musculoskeletal info)

Fundamentals of Musculoskeletal Assessment Techniques, 2e M. Lynn Palmer, Marcia E. Epler, Michael Adams (accessible online via UBC Library)

Basic Biomechanics of the Musculoskeletal System, 5e Margareta Nordin, Victor H. Franke

Kinesiology: The Mechanics and Pathomechanics of Human Movement, 3e Carol A. Oatis

Recommended Software

Complete Anatomy 3D4Medical

Additional readings will be provided throughout the course to complement textbook reading

Academic Integrity

The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity (i.e., misconduct) lead to the breakdown of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. **For example, incidences of plagiarism or cheating usually result in a failing grade or mark of zero on the assignment or in the course.** Careful records are kept to monitor and prevent recidivism.

A more detailed description of academic integrity, including the University's policies and procedures, may be found in the Academic Calendar at:
http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,54,111,0

Generative Artificial Intelligence Tools (e.g., ChatGPT)

Use of generative artificial intelligence tools to complete coursework in this course is prohibited in all cases. Use of these tools is considered an unauthorized means to complete an examination or other assignment or assessment and would be considered academic misconduct.

Final Examinations

You can find the Senate-approved term and examination dates here. Except in the case of examination clashes and hardships (three or more formal examinations scheduled within a 27-hour period) or unforeseen events, students will be permitted to apply for out-of-time final examinations only if they are representing the University, the province, or the country in a competition or performance; serving in the Canadian military; observing a religious rite; working to support themselves or their family; or caring for a family member. Unforeseen events include (but may not be limited to) the following: ill health or other personal challenges that arise during a term and changes in the requirements of an ongoing job.

Further information on Academic Concession can be found under Policies and Regulation in the Okanagan Academic Calendar http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,48,0,0

Grading Practices

Faculties, departments, and schools reserve the right to scale grades in order to maintain equity among sections and conformity to University, faculty, department, or school norms. Students should therefore note that an unofficial grade given by an instructor might be changed by the faculty, department, or school. Grades are not official until they appear on a student's academic record.
http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,41,90,1014

Student Services Resources:

UBC Okanagan Disability Resource Centre

The DRC facilitates disability-related accommodations and programming initiatives to remove barriers for students with disabilities and ongoing medical conditions. If you require academic accommodations to achieve the objectives of a course please contact the DRC at:

UNC 215 250.807.8053
email: drc.questions@ubc.ca
Web: www.students.ok.ubc.ca/drc

UBC Okanagan Equity and Inclusion Office

Through leadership, vision, and collaborative action, the Equity & Inclusion Office (EIO) develops action strategies in support of efforts to embed equity and inclusion in the daily operations across the campus. The EIO provides education and training from cultivating respectful, inclusive spaces and communities to understanding unconscious/implicit bias and its operation within in campus environments. UBC Policy 3 prohibits discrimination and harassment on the basis of BC's Human Rights Code. If you require assistance related to an issue of equity, educational programs, discrimination or harassment please contact the EIO.

UNC 325H 250.807.9291
email: equity.ubco@ubc.ca
Web: www.equity.ok.ubc.ca

Student Wellness

At UBC Okanagan health services to students are provided by Student Wellness. Nurses, physicians and counsellors provide health care and counselling related to physical health, emotional/mental health and sexual/reproductive health concerns. As well, health promotion, education and research activities are provided to the campus community. If you require assistance with your health, please contact Student Wellness for more information or to book an appointment.

UNC 337 250.807.9270
email: healthwellness.okanagan@ubc.ca
Web: www.students.ok.ubc.ca/health-wellness

Office of the Ombudperson

The Office of the Ombudsperson for Students is an independent, confidential and impartial resource to ensure students are treated fairly. The Ombuds Office helps students navigate campus-related fairness concerns. They work with UBC community members individually and at the systemic level to ensure students are treated fairly and can learn, work and live in a fair, equitable and respectful environment. Ombuds helps students gain clarity on UBC policies and procedures, explore options, identify next steps, recommend resources, plan strategies and receive objective feedback to promote constructive problem solving. If you require assistance, please feel free to reach out for more information or to arrange an appointment.

UNC 328 250.807.9818
email: ombuds.office.ok@ubc.ca
Web: www.ombudsoffice.ubc.ca

Student Learning Hub

The Student Learning Hub is your go-to resource for free math, science, writing, and language learning support. The Hub welcomes undergraduate students from all disciplines and year levels to access a range of supports that include **tutoring in math, sciences, languages, and writing, as well as help with study skills and learning strategies**. Students are encouraged to visit often and early to build the skills, strategies and behaviors that are essential to being a confident and independent learner. For more information, please visit the Hub's website.

LIB 237 250.807.8491
email: learning.hub@ubc.ca
Web: www.students.ok.ubc.ca/slh

The Global Engagement Office

The Global Engagement Office provides advising and resources to assist International students in navigating immigration, health insurance, and settlement matters, as well as opportunities for intercultural learning, and resources for Go Global experiences available to all UBC Okanagan students, and more.

Come and see us – we are here to help! You may also contact geo.ubco@ubc.ca

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Safewalk

Don't want to walk alone at night? Not too sure how to get somewhere on campus? Call Safewalk at ***250-807-8076.***

For more information, see: www.security.ok.ubc.ca