DESCRIPTION OF COURSE UNIT FOR DOCTORAL STUDIES AT VILNIUS UNIVERSITY

Scientific Area/eas, Field/ds of Science	Medical and Health Sciences (M 000): Medicine (M 001); Dentistry (M002); Public Health (M 004)			
Faculty, Institute, Department/Clinic	Faculty of Medicine Institute of Biomedical Sciences Department of Anatomy, Histology and Anthropology			
Course unit title (ECTS credits, hours)	**Anthropometry and Other Methods of Human Body Investigation** 8 credits (212 hours)			
Study method	**Lectures**	**Seminars**	**Consultations**	**Self-study**
Number of ECTS credits	-	-	2	6
Method of the assessment (in 10 point system)	Presentation of the report: the report is presented on a chosen topic, which is coordinated with the coordinating lecturers. The doctoral student must analyze, review and present the newest scientific publications related to the relevant topic. Evaluation criteria: - novelty and relevance of the submitted material (2 points); - general structure and scope of the report, clear presentation of the knowledge, argumentation, conciseness and specificity (2 points); - summary, problematic issues, presentation and justification of conclusions (2 points); - presentation of the application of the reviewed knowledge in the dissertation (2 points); - organization of visual aids, ability to participate in discussion, control of questions, oratory skills (2 points). The minimal positive score is 5.			

PURPOSE OF THE COURSE UNIT

To provide deeper theoretic and practical knowledge on anthropometry and other methods of human body investigation, their application and evaluation. To promote interest and deepening in the investigations of human body and the application of the acquired knowledge in solving the interdisciplinary problems of doctoral topics in various fields of science.

THE MAIN TOPICS OF COURSE UNIT

Introduction. History of anthropometry and other methods of human body examination. Anthropometric instruments, their preparation for research. Somatometry. Description of anthropometric points and their localization. Classification of morphological characteristics and their description. Anthropometric research programs, their selection and application.

The main indices of physical status: height, body weight, chest circumference, and their measurement. Indices of body proportions and their measurement. Body mass index, its application to the assessment of obesity and leanness, advantages and disadvantages.

Body composition studies. Anthropometric dimensions characterizing body composition. Active and passive mass. Indices of skeletal robustness, muscle mass. Assessment of fat accumulation. Skinfolds and their measurement. Body circumferences and derived indicators (e.g., hip ratio, conicity index). Other methods of determining body composition, their application, evaluation.

Densitometry, underwater weighing, air plethysmography. Bioelectric impedance. Hydrometry. Chemical analysis of body tissues and fluids. Dual energy X - ray absorptiometry. Possibilities and application of imaging technologies in body composition research: computed tomography, magnetic resonance imaging, ultrasound.

Multicomponent body composition models. Comparison, advantages and disadvantages of different body composition research methods. Mathematical equations for calculating active and passive body mass.

Assessment of body build. Somatoscopy. Descriptive and quantitative methods of body build assessment. Main physique coordinates: broad and narrow body, bone, muscle and adipose tissue, micro- and macrosomy, andro- and gynecomorphy. Somatotype classification systems: E. Kretschmer, V. Sheldon, Heat-Carter. Metric index. The physiological aspect of the constitution and its significance in medicine. Head and face anthropometry. Monitoring and evaluation of tooth eruption and change. Dermatoglyphics.

Peculiarities of anthropometric research in different age groups. Fetal measurements. Pediatric anthropometry. Anthropometry of the elderly. Methods for determining biological age. Assessment of puberty. Assessment of primary and secondary sexual characteristics. Methods for determining and evaluation of spermarchy, menarche (status quo and retrospective methods, probit analysis). Chronology and tempo of puberty in boys. Chronology and tempo of puberty in girls. Sexual dimorphism of anthropometric measurements.

Osteometry. Craniometry and osteometry instruments. The most important points of craniometry and osteometry. Craniometric and osteometric dimensions and indices. Discrete signs of the skull and teeth. Methods of determining a person's age (formation of dental crowns, occurrence of ossification points, ossification of the epiphyses, changes in the pubic occlusion, ossification of the cranial sutures, progression of osteoporosis). Methods for determining a person's sex (qualitative skeletal features and discriminatory equations). Regression equations for personal height reconstruction. Odontometry: Measurement of teeth in the skull and measurement of dental impressions. Basic dimensions and indices of crowns and roots.

Functional anthropometry. Test methods for physiometric parameters. Measurements and evaluation of arterial blood pressure. Spirometry and its evaluation. Methods of muscle strength assessment, dynamometry. Goniometry. Methods of functional asymmetry research.

Anthropometric statistics. Statistical methods. Descriptive statistics. Measurement errors (intra- and interobserver), their estimation and significance for data reliability. Physical index method. Percent distribution method (percentiles). Methods of correlation, components and factor analysis.

Significance and application of anthropometry to the study of individuals and populations. Growth and maturation standards. Psychology and anthropometry of body image evaluation. Self-esteem. Anthropometry in sports, ergonomics, biomechanics, fine arts.

RECOMMENDED LITERATURE SOURCES

1. Body composition – Health and Performance in Exercise and Sport [Ed. By H.C. Lukashky]. Taylor & Francis, 2017
2. Cash T.F., Smolak L. Body Image: a Handbook of Science, Practice, and Prevention (2nd edtition). The Guilford Press, 2012
3. Cameron N. and Bogin B. Human growth and development (3rd edition). Academic Press, 2021.
4. George R.M. Facial Geometry: Graphic Facial Analysis for Forensic Artists. Charles Thomas LTD, 2007.

5. Gripp K.W., Slavotinek A.M., Hall J.G., Allanson J. Handbook of Physical Measurements (3rd edition). Oxford University Press, 2013
6. Gropper S.S., Smith J.L., Groff J.L. Advanced nutrition and human metabolism (7th edition). Wadsworth Cengage Learning, 2022.
7. Handbook of Anthropometry: Physical Measures of Human Form in Health and Disease. [Ed. By V. R. Preedy] Springer, 2016.
8. Katzenberg M.A., Saunders S.R. Biological Anthropology of the Human Skeleton (3rd edition). Wiley-Liss, 2018.
9. Pheasant S., Haslegrave, C. M. Bodyspace: Anthropometry, ergonomics and the design of work. CRC Press, 2005 (el. edition 2018).
10. Sardesai V. Introduction to Clinical Nutrition. CRC Press Taylor & Francis group, 2017.
11. Herman-Giddens M. E., Bourdony C. J., Dowshen S. A., Reiter E. O. Assessment of Sexual Maturity Stages in Girls and Boys [eBook]. American Academy of Pediatrics, 2011.
12. Madrigal L. Statistics for Anthropology: Second Edition Cambridge University Press. 2012. http://ndl.ethernet.edu.et/bitstream/123456789/31863/1/Lorena%20Madrigal_2012.pdf
13. Grogan S. Body Image: Understanding Body Dissatisfaction in Men, Women and Children (4th edition). Taylor&Francis, 2022 https://www.routledge.com/Body-Image-Understanding-Body-Dissatisfaction-in-Men-Women-and-Children/Grogan/p/book/9780367569495
14. Fryar C.D., Kruszon-Moran D., Gu S., Carroll M., Ogden L.S. Mean Body Weight, Height, Waist Circumference, and Body Mass Index Among Children and Adolescents: United States, 1999–2018. National Health Statistics Reports, N.160, August 4, 2021. https://www.cdc.gov/nchs/data/nhsr/nhsr160-508.pdf
15. https://dapa-toolkit.mrc.ac.uk/anthropometry/introduction/anthropometry

CONSULTING LECTURERS

1. Coordinating lecturer: Eglė Marija Jakimavičienė (Assoc. Prof. Dr.).
2. Janina Tutkuvienė (Prof. Dr. HP).
3. Arūnas Barkus (Assoc. Prof. Dr.).

APPROVED:

By Council of Doctoral School of Medicine and Health Sciences at Vilnius University: 29th of September 2022

Chairperson of the Board: Prof. Janina Tutkuvienė