Basics of medical science	
Module code	**mIsMedCompact-02a**
Abbreviated title	MedCompact
Components	Lectures, practical
When	Semesters 1+2 (Human biology = semester 1; Genomic Diagnostics = semester 2)
Coordinator Organiser	E. Hütten B. Kurz (Human Biology) M. Forster (Genomic Diagnostics)
Lecturers	**M. Forster** (Genomic Diagnostics) **B. Kurz** (Human Biology)
Contact hours	Lecture Human Biology 3 CH Practical Human Biology 1 CH Seminar Genomic Diagnostics 3 CH
Workload Total: 180 h	<u>Lecture and practical Human Biology (semester 1): 90 h</u> Attendance time 49 h, preparation 20 h, revision 21 h <u>Lecture Pharmacology (semester 2): 90 h</u> Attendance time 38 h, preparation 20 h, revision 32 h
Credit points	6 (Human Biology lecture with practical 3 CP, Genomic diagnostics seminar 3 CP)
Requirements	-
Expected outcome	<u>Knowledge</u>: Students - have gained a sound foundation in human biology with particular emphasis on cytological and anatomical knowledge of organ groups and their function - have acquired enough pharmacological knowledge to understand medical research questions - are familiar with requirements (technical, legal, reimbursement) for genomic examinations in the clinical setting - know the underlying bioinformatic and informatic principles/components for clinical genomic examinations -are familiar with colorectal cancer somatic genomics and hereditary breast/ovarian cancer germline genetics <u>Skills</u>: Students - understand the anatomical and physiological connections between different organ groups in the human body; they can point out their location in the human body and describe their functions - are able to use clinical software to detect, filter, and classify mutations, and to generate genomic laboratory and clinical reports <u>Competences</u>: Students - are able to put the acquired knowledge into medical contexts on a molecular level - can relate it to other areas of knowledge (e.g. pathology)

	- can transfer the acquired knowledge in genomic diagnostics to new scientific questions when applying bioinformatics in biomedical data analysis. - are able to perform gap analysis of requirements versus current capabilities or limitations, and thereby identify scope for improvements in, for example, regulations, reimbursement schemes, laboratory products and clinical software.
Content:	Basics of cytology, anatomy (e.g. exocrine glands, bones and cartilage, skin, nervous tissue, muscle tissue, motor end plate, blood-brain barrier, autonomic and central nervous system, blood, lymphatic organs, respiratory organs, liver, gastro-intestinal tract, heart function/ECG). Laws/regulations/guidelines/standards/procedures that are relevant for genomic diagnostic examinations. Introduction to familial predisposition, germline variants and intensified screening in the case of familial breast or ovarian cancer. Hands-on exercises with clinical software using NGS data from colorectal cancer cases.
Module evaluation/ exam	**Graded** Oral exam Human Biology (1st semester) Presentation in Genomic diagnostics (2nd semester)
Media used	**Human biology** PPT presentations, macroscopic/microscopic specimens **Genomic diagnostics** Software for data analysis, PPT presentations, electronic whiteboards
Literature	**Human biology** Marieb Elaine N, Hoehn Katja, Human Anatomy and Physiology (Pearson Education 10th edition, 2015). Ross Michael H., Wojciech Pawlina, Histology, a Text and Atlas. (Lippincott Raven 2010). **Genomic diagnostics** Alexander Hendricks *et al.* Stage IV Colorectal Cancer Patients with High Risk Mutation Profiles Survived 16 Months Longer with Individualized Therapies (Cancers, 2020, PMID: 32046290) College of American Pathologists guidelines (CAP) (https://www.cap.org/protocols-and-guidelines/cap-guidelines) Patrica Martin-Romano *et al.* European Society for Medical Oncology Scale for Clinical Actionability of Molecular Targets (ESCAT) (https://ascopubs.org/doi/10.1200/PO.21.00484) S2k-Leitlinie Humangenetische Diagnostik und Genetische Beratung (https://register.awmf.org/assets/guidelines/078-015l_S2k_Humangenetische_Diagnostik_Genetische_Beratung_2019-08.pdf) (https://www.onkopedia-guidelines.info/en/onkopedia/guidelines/colon-cancer/@@guideline/html/index.html)