Title of module	Advanced Practical in the Focal Point Programme: "Molecular Medicine" VZ: 185881 **" Evaluation of DNA methylation and miRNAs as biomarkers"**

Credit points	7.5 (of 15)	***Available in semester(s)***	2
Hours per week	9	***Compact course***	☒

Lecturer(s)	G. Johnen, P. Rozynek, D.G. Weber
Teaching methods	A five-week all-day practical lab course with a compulsory seminar presentation.
Evaluation of learning progress	Active participation, feedback during independently performed experiments, project discussions with the supervisor
Mode of examination	Assessment of experimental skills during the practical (50%), a written project report (40%), and a seminar presentation of experimental results (10%).
Learning objectives	The student will acquire an intimate knowledge of molecular biological and modern analysis techniques
Soft skills	Seminar presentation of current publications and experimental data obtained during the practical

Contents of module	DNA and RNA extraction from different body fluids and/or formalin fixed tissue Evaluation of new strategies for the isolation of DNA and RNA microRNA and mRNA analyses using qRT-PCR and microfluidic electrophoresis Assessment of microRNA and mRNA stability under several conditions Evaluation of microRNAs as possible biomarkers DNA-Methylation analysis using pyrosequencing as well as methylation specific PCR (MSP) combined with microfluidic electrophoresis Cloning and sequencing of bisulfite-modified DNA Evaluation and optimization of new DNA-methylation assays