Module	***Quantum technologies in application - Business Case Development***
Code	
Instruction language	English
ECTS credits	3
Classroom time	2 hours per week
Duration	1 semester
Cycle	Winter or Summer semester
Coordinator	Dean of Physics Studies
Lecturers	Prof. Dr. Kai Bongs
Allocation to study programmes	i.e. Physics M.Sc., D - Examination Field Master Programmes E - Examination Field General Range of Studies, 1st or 2nd semester
Formal prerequisites	-
Recommended prerequisites	
Learning objectives	Students who successfully passed this module: • know the possibilities and limitations of quantum technologies. • understand the fundamental relationships between scientific parameter spaces, technical feasibility and economic feasibility. • are able to combine independent literature analysis with critical discussion and mathematical estimation. • have a basic understanding of entrepreneurship and can apply specific tools for solution design. • are able to practically apply knowledge gained in their respective field to a real-world application. • have gained basic knowledge of multidisciplinary collaboration for goal-oriented solution finding and a cultural understanding of the values and scientific approaches of other disciplines.
Content	The following technical contents are taught in this module: • Functioning of quantum technologies, especially quantum sensors and quantum clocks (light-atom interaction, superposition, detection, environmental influences). • Functionality and requirements of applications in areas such as medicine, climate, communication, radar and transport. • -Introduction to entrepreneurship and sustainable business models. • Interdisciplinary and advanced content: • Solution design: methods and procedures to develop implementable solutions in a complex subject domain in interdisciplinary teams. • Interdisciplinary group work • Specific content for individual subject disciplines (when embedded in a degree programme): Physics: - Estimation of the fundamental physical limits, as well as the practically achievable performance of a selected quantum technology under environmental influences.

Literature	tba
Teaching and learning methods	i.e. Lecture with exercise (5 hours per week)
Workload	xx hours lecture (attendance time) xx hours exercise (attendance time) xx hours private study Total: xxx hours
Assessment	The module examination consists of a graded written or oral examination, depending on the number of participants. Participation in the examination requires an ungraded study achievement. The type, content and scope of the study achievement will be announced in good time in the course information.
Basis for	