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Regulations on Enrolling in the College of Science “Quantum Technology” Credit Program

Approved by the Academic Affairs Committee on October 11, 2023

1. The purpose of this Program is to cultivate students’ understanding of the concept, theory and technology of quantum, enhance their multi-disciplinary knowledge, and provide them with a foundation for working in related area or academic research in the future.
2. All NCU students in any college may enroll in this elective Program.
3. A student is deemed to have completed this Program if they have obtained 15 (or more) academic credits from courses in this Program in accordance with these Regulations. The annotation “Completion of the College of Science Quantum Technology Credit Program” will be added to their official academic transcript and they will also be presented with a program certificate.
4. The rules for recognition of course credits in this Program are as follows (see Table 1):
 - (1) Must complete 6 credits of the compulsory courses.
 - (2) Must take at least one course each from the “Basic Compulsory Elective” and “Advanced Compulsory Elective” courses.
 - (3) In addition to the compulsory courses, the student must also complete at least 9 credits of other courses listed in Table 1.
5. NCU may offer other courses that have a similar name or content to courses in this Program. Credits may be recognized in accordance with the NCU Course Credit Waiver and Transfer Guidelines when applied to the teaching unit for this program.
6. These Regulations were approved by the college-level Curriculum Committee of the unit offering this Program and then submitted to the University Curriculum Committee and Academic Affairs Committee for approval before being implemented. Amendments shall follow the same procedure.

Table 1 “Quantum Technology” Credit Program Courses and Categories

Category	Teaching Unit	Course Name	Academic Credits	Course ID	Notes
Compulsory Course	College of Science	Introduction to Quantum Technology	3	SH5005	New
	College of Science	Quantum Experiments and Exercises	3	SH5004	
Basic Elective Compulsory	Department of Physics Department of Optics and Photonics	Quantum Physics	3	PH3009 OS2012	Must select one course from this category
	Department of Physics Department of Optics and Photonics	Quantum Optics	3	PH7064 OS7009	
Advanced Elective Compulsory	College of Science Department of Computer Science and Information Engineering	Quantum Computation	3	SH5002 CE5082	Must select one course from this category
	Department of Optics and Photonics	Basic Quantum Communications and Protocols	3	OS7208	New
	Department of Optics and Photonics	Quantum Photonic Elements	3	OS7209	New

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Category	Teaching Unit	Course Name	Academic Credits	Course ID	Notes
Elective Course	Department of Mathematics	Introduction to Scientific Computing	3	MA1018	Up to 3 academic credits recognized from these 5 courses
	Department of Mathematics	Linear Algebra I	3	MA2007	
	Department of Computer Science and Information Engineering Department of Information Management	Linear Algebra		CE2005 IM2005	
	Department of Communication Engineering Department of Electrical Engineering	Engineering Mathematics - Linear Algebra		CO1007 EE1009	
	Department of Mathematics	Introduction to Cryptography		3	
	Department of Mathematics	Mathematical Foundation of Quantum Computing	3	MA5501	
	Department of Physics	Introduction to Quantum Mechanics	3	PH3008	
	Department of Physics	Quantum Mechanics I	3	PH6003	
	Department of Physics	Quantum Mechanics II	3	PH6004	
	Department of Optics and Photonics	Optoelectronic Semiconductor Physics	3	OS2011	
	Department of Optics and Photonics	Introduction to Lasers	3	OS3005	
	Department of Optics and Photonics	Nonlinear Optics	3	OS6064	
	Department of Optics and Photonics	Ultrafast Optics	3	OS7162	
	Department of Mechanical Engineering	Silicon Materials and Applications	3	ME5090	
	Department of Communication Engineering	Information Theory	3	CO6020	
Department of Communication Engineering	Coding Theory	3	CO6023		