Example Curricula for Variations “Q” and “NQ”

Examples for Variation "Q"

Example of a curriculum for a student of variation "**Q**" interested in **theoretical physics:**

	First Semester	Second Semester	Third Semester	Fourth Semester
Mandatory	Concepts of QS (6CP)	Mini Research Project (9CP)	Preparation for MSc Thesis (18CP)	MSc Thesis (30CP)
		Seminar (6CP)		
Electives	Quantum Effects and Quantum Paradoxa (6CP)	Quantum Information Theory (9CP)	Advanced Functional Analysis (9CP)	
	Laser Spectroscopy (6CP)		Research School (3CP)	
	Complexity Theory 1 (6CP)	Quantum Complexity Theory (6CP)		
	Deep Learning (6CP)			
CP Sum	30	30	30	30

Example of a curriculum for a student of variation "**Q**" interested in **experimental physics:**

	First Semester	Second Semester	Third Semester	Fourth Semester
Mandatory	Concepts of QS (6CP)	Mini Research Project (9CP)	Preparation for MSc Thesis (18CP)	MSc Thesis (30CP)
		Seminar (6CP)		
Electives	Quantum Theory of Light (6CP)	Experimental Quantum Optics (9CP)	Quantum Effects and Quantum Paradoxa (6CP)	
	Laser Spectroscopy (6CP)		Nano Optics (6CP)	
	Nanotechnology (6CP)			
	Photonics I (6CP)	Photonics II (6CP)		
CP Sum	30	30	30	30

Example of a curriculum for a student of variation "**Q**" interested in **theoretical physics**, beginning in **summer term:**

	First Semester	Second Semester	Third Semester	Fourth Semester
Mandatory	Mini Research Project (9CP)	Concepts of QS (6CP)	Preparation for MSc Thesis (18CP)	MSc Thesis (30CP)
	Seminar (6CP)			
Electives	Quantum Information Theory (9CP)	Quantum Effects and Quantum Paradoxa (6CP)	Quantum Theory of Light (6CP)	
	Condensed Matter theory (6CP)	Laser Spectroscopy (6CP)		
		Complexity Theory 1 (6CP)	Quantum Complexity Theory (6CP)	
		Deep Learning (6CP)		
CP Sum	30	30	30	30

Examples for Variation "NQ"

Examples of curricula for a student of variation "**NQ**" interested in **mathematics:**

	First Semester	Second Semester	Third Semester	Fourth Semester
Mandatory	Concepts of QS (6CP)	Mini Research Project (9CP)	Preparation for MSc Thesis (18CP)	MSc Thesis (30CP)
	Quantum Phenomena (6CP)	Seminar (6CP)		
	Introduction to QT (9CP)			
Electives		Quantum Theory of Light (6CP)	Internship in Industry (3CP)	
	Algorithmic Algebra (9CP)	Advanced Algebra (9CP)	Functional Analysis (9CP)	
CP Sum	30	30	30	30

	First Semester	Second Semester	Third Semester	Fourth Semester
Mandatory	Concepts of QS (6CP)	Mini Research Project (9CP)	Preparation for MSc Thesis (18CP)	MSc Thesis (30CP)
	Quantum Phenomena (6CP)	Seminar (6CP)		
	Introduction to QT (9CP)			
Electives		Theoretical Particle Physics (9CP)		
	Functional Analysis (9CP)	Nonlinear Optimization (9CP)	Advanced Functional Analysis (9CP)	
CP Sum	30	33	27	30

Examples of curricula for a student of variation "**NQ**" interested in **computer science:**

	First Semester	Second Semester	Third Semester	Fourth Semester
Mandatory	Concepts of QS (6CP)	Mini Research Project (9CP)	Preparation for MSc Thesis (18CP)	MSc Thesis (30CP)
	Quantum Phenomena (6CP)	Seminar (6CP)		
	Introduction to QT (9CP)			
Electives		Quantum Information Theory (9CP)	Quantum effects and quantum paradoxa (6CP)	
	Algorithmic Algebra (9 CP)	Statistical Learning Theory (6 CP)	Complexity Theory 1 (6CP)	
CP Sum	30	30	30	30

	First Semester	Second Semester	Third Semester	Fourth Semester
Mandatory	Concepts of QS (6CP)	Mini Research Project (9CP)	Preparation for MSc Thesis (18CP)	MSc Thesis (30CP)
	Quantum Phenomena (6CP)	Seminar (6CP)		
	Introduction to QT (9CP)			
Electives	Complexity Theory 1 (6 CP)	Quantum Complexity Theory (6CP)	Quantum effects and quantum paradoxa (6CP)	
	Deep Learning (6 CP)	Recent Advances in ML (6CP)	Compressive Sensing (6CP)	
CP Sum	33	27	30	30

Examples of curricula for a student of variation "**NQ**" interested in **electrical engineering:**

	First Semester	Second Semester	Third Semester	Fourth Semester
Mandatory	Concepts of QS (6CP)	Mini Research Project (9CP)	Preparation for MSc Thesis (18CP)	MSc Thesis (30CP)
	Quantum Phenomena (6CP)	Seminar (6CP)		
	Introduction to QT (9CP)			
Electives	Lab Course Physics (9CP)	Experimental Quantum Optics (9CP)	Laser spectroscopy (6CP)	
		Photonic Devices (6CP)	High Frequency Engineering (6CP)	
CP Sum	30	30	30	30

	First Semester	Second Semester	Third Semester	Fourth Semester
Mandatory	Concepts of QS (6CP)	Mini Research Project (9CP)	Preparation for MSc Thesis (18CP)	MSc Thesis (30CP)
	Quantum Phenomena (6CP)	Seminar (6CP)		
	Introduction to QT (9CP)			
Electives	Compressive Sensing (6CP)	Photonic Devices (6CP)	Nanotechnology (6CP)	
	Photonics I (6 CP)	Photonics II (6CP)	Experimental methods of quantum and nano optics (6CP)	
CP Sum	33	27	30	30