# Example Curricula for Variations "Q" and "NQ"

## Examples for Variation "Q"

Example of a curriculum for a student of variation " $\mathbf{Q}$ " interested in **theoretical physics:** 

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

Example of a curriculum for a student of variation " $\mathbf{Q}$ " interested in **theoretical physics**, beginning in **summer term:** 

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

# Examples for Variation "NQ"

Examples of curricula for a student of variation " $\mathbf{NQ}$ " interested in **mathematics:** 

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

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

# Examples of curricula for a student of variation " $\mathbf{NQ}$ " interested in **computer science:**

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

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

# Examples of curricula for a student of variation " $\mathbf{NQ}$ " interested in **electrical engineering:**

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