Course Structure for Ph. D Program
GPE, Department of Mathematics
National Taiwan Normal University

Adaptive to Class of	Required Credit(s)	Elective Credit(s)	Free Elective Credit(s)	Minimum Total Credits for Graduation
110	4.0	18.0	0.0	22.0

Note: The first alphabet "E" on the course name refers to the course in English as a medium of instruction

I. Required Courses: 4.0 credits are required

Course Code	Course Name	Credit(s)	Credit Unit		Note
			Lecture Hour	Lab/Practice Hour	
MAC8028	1 E Trend of Mathematics Research	1.0	1.0	0.0	This course must be retaken with a passing score for 4 times

II. Elective Courses: 0.0 credit is required

Doctoral courses are form six divisions: Analysis, Algebra, Geometry, Applied mathematics, Statistics, and Math. education. The former 5 divisions are math. professional courses.

III. Courses Offered to Students in Different Divisions

Required Course, 0.0 credit is required

Elective Course: 18.0 credits are required

Course Code	Course Name	Credit(s)	Credit Unit		Note
			Lecture Hour	Lab/Practice Hour	
	1 Elective courses of the Mathematical analysis				
MAC0084	1-1 E Topics in Convex Analysis	3.0	3.0	0.0	
MAC0193	1-2 E Topics in Nonlinear Analysis(I)	3.0	3.0	0.0	
MAC0194	1-3 E Topics in Nonlinear Analysis(II)	3.0	3.0	0.0	
MAC0197	1-4 E Geometric Measure Theory(I)	3.0	3.0	0.0	
MAC0198	1-5 E Geometric Measure Theory(II)	3.0	3.0	0.0	
MAC8026	1-6 E Topics in Geometric Measure Theory (I)	3.0	3.0	0.0	
MAC8027	1-7 E Topics in Geometric Measure Theory (II)	3.0	3.0	0.0	
	2 Elective courses of the Geometry				
MAC0146	2-1 E Topics on Geometric Analysis (I)	3.0	3.0	0.0	
MAC0147	2-2 E Topics on Geometric Analysis (II)	3.0	3.0	0.0	
MAC7001	2-3 E Riemannian Geometry (I)	3.0	3.0	0.0	
MAC7002	2-4 E Riemannian Geometry (II)	3.0	3.0	0.0	
MAC8003	2-5 E Modern Differential Geometry (I)	3.0	3.0	0.0	
MAC8004	2-6 E Modern Differential Geometry (II)	3.0	3.0	0.0	
MAC8010	2-7 E Topics in Differential Geometry (I)	3.0	3.0	0.0	
MAC8011	2-8 E Topics in Differential Geometry (II)	3.0	3.0	0.0	
MAC8019	2-9 E Geometry and Topology (I)	3.0	3.0	0.0	
MAC8020	2-10 E Geometry and Topology (II)	3.0	3.0	0.0	
MAD0111	2-11 E Special Topics in Geometry	3.0	3.0	0.0	
MAD0112	2-12 E Special Topics in Geometry (I)	3.0	3.0	0.0	
MAD0113	2-13 E Special Topics in Geometry (II)	3.0	3.0	0.0	
	3 Elective courses of the Applied mathematics				
MAC0081	3-1 E Topics in Optimization Theory (I)	3.0	3.0	0.0	
MAC0082	3-2 E Topics in Optimization Theory (II)	3.0	3.0	0.0	
MAC0086	3-3 E Topics in Complementarity Problems	3.0	3.0	0.0	
MAC0143	3-4 E Nonlinear Programming (I)	3.0	3.0	0.0	
MAC0144	3-5 E Nonlinear Programming (II)	3.0	3.0	0.0	
MAC0003	3-6 E Advanced Operation Research	3.0	3.0	0.0	
	4 Elective courses of the Mathematics education				
MAC0025	4-1 E Research on Mathematical Thinking and Process (I)	3.0	3.0	0.0	
MAC0026	4-2 E Research on Mathematical Thinking and Processes (II)	3.0	3.0	0.0	
MAC0103	4-3 E Comparative Studies in Mathematics Education	3.0	3.0	0.0	
MAC0191	4-4 E Topics in Mathematics Education(I)	3.0	3.0	0.0	
MAC0192	4-5 E Topics in Mathematics Education(II)	3.0	3.0	0.0	
MAD0081	4-6 E Rethinking the Mathematics Curriculum	3.0	3.0	0.0	

IV. Free Elective Credits: 0.0 credit is required