

The Graduate Institute of Science Education Graduation Schedule and Framework of Program for Doctoral Students

(Applicable to students accepted starting 2017 academic year)

		The first year				The second year					
		Fall semester		Spring semester		Fall semester		Spring semester			
		Credits	Hours	Credits	Hours	Credits	Hours	Credits	Hours		
Required subjects		Advanced Research Seminar on Science Education (I)	2	2			Advanced Research Seminar on Science Education (III)	2	2		
		Advanced Research Seminar on Science Education (II)			2	2	Advanced Research Seminar on Science Education (IV)		2	2	
							Doctoral Dissertation		0	0	
						Thesis Supervision (I)	3	0			
						Thesis Supervision (II)		3	0		
Elective subjects	The field of research	Cognitive Neuroscience and Math/Science Learning	3	3			Advanced Topics in Informal Science Learning (I)	1	1		
		Topics in Informal Science Learning (I)	1	1			Advanced Topics in Informal Science Learning (II)			1	1
		Topics in Informal Science Learning (II)			1	1	Advanced Educational Statistics			3	3
		Study of Teacher Education on Science/Math (I)	1	1			Advanced Topics in Teacher Education on Science/Math (I)	1	1		
		Study of Teacher Education on Science/Math (II)			1	1	Advanced Topics in Teacher Education on Science/Math (II)			1	1
		Science/Math Educational Statistics	3	3			Advanced Topics in Science/Math Teaching (I)	1	1		
		Topics in Science/Math Teaching (I)	1	1			Advanced Topics in Science/Math Teaching (II)				
		Topics in Science/Math Teaching (II)			1	1	Advanced Topics in Science/Math Teaching (I)				
		Topics in Cognitive Psychology of Science/Math (I)	1	1			Advanced Topics in Science/Math Teaching (II)			1	1
		Topics in Cognitive Psychology of Science/Math (II)			1	1	Advanced Topics in Cognitive Psychology of Science/Math (I)	1	1		
		Topics in Science/Math Learning (I)	1	1			Advanced Topics in Cognitive Psychology of Science/Math (II)			1	1
		Topics in Science/Math Learning (II)			1	1	Advanced Topics in Science/Math Learning (I)				
		Math Inquiry Learning and Teaching Case Studies (I)	1	1			Advanced Topics in Science/Math Learning (I)	1	1		

	Math Inquiry Learning and Teaching Case Studies (II)		1	1	Advanced Topics in Science/Math Learning (II)			1	1
	Qualitative Research		3	3	Advanced Topics in Math Inquiry-based Learning and Teaching (I)	1	1		
					Advanced Topics in Math Inquiry-based Learning and Teaching (II)			1	1
					Academic Reading and Writing for Science/Math Education (I)	2	2		
					Academic Reading and Writing for Science/Math Education (II)			2	2
					Qualitative Data Analysis	3	3		

Elective subjects	The field of practice	Theories and Practice of APOS	3	3			Special Topics in Theories and Practice of Informal Science	3	3		
		Cooperative Learning			3	3	Science Fair Activity Design and Research			3	3
		Critical Thinking			3	3	Theories and Practice of Science Reading and Writing				
		Innovation and Research in Physics Teaching	3	3			Integrated Science	3	3		
		Introduction to Theories and Practice in Informal Science			3	3	Computer-Aid Instructional Design in Science/Math	3	3		
		Introduction to Metacognition and Science/Math Learning			3	3	Special Topics in Theories and Practice of Science/Math Inquiry-based Teaching	3	3		
		Design of Science/Math Games	3	3			Theories and Practice of Math Modeling Teaching			3	3
		Science Activity Design	3	3							
		Special Topics on Themes and Issues in Science Education			3	3					
		Advanced Math Thinking			3	3					
		Applying Computer on Science Education	3	3							
		Measurement and Evaluation in Science/Math Education			3	3					
		Introduction to Theories and Practice of Science/Math Inquiry-based Teaching	3	3							
		Science/Math Teaching Models			3	3					
		Theory and Practice of Math Inquiry Activity Design	3	3							
		Theories and Practice of Science/Math Curriculum	3	3							
		Argumentation: Teaching and Learning			3	3					

Graduation Requirements:

1. Graduation credits: At least 35 credits, including required subjects 8 credits, elective subjects 27 credits (excluding credits for thesis supervision 6 credits).
2. Before Graduating, doctoral students require at least 6 credits in the field of research, in the field of theory, and in the field of practice, respectively.
3. Signing up all of the above course credits will be adopted as the graduation credits. After registration all students have to attend at least one course (including doctoral dissertation).
4. Doctoral students are available to sign up 6 doctoral credits at the other Institutes/ schools and these credits are adopted as graduation credits.
5. If doctoral students did not have the credits about "Special Topics on Science Education" and "Research Methods of Science Education", please sign up the two courses in the first/ second year and they do not be adopted as doctoral graduation credits.
6. Doctoral students have to sign up "Academic Reading and Writing for Science/Math Education (I)/ (II) "
7. The credits of master's and doctoral common courses are adopted as graduation credits.
8. Doctoral students who want to register educational courses are required to pass the exam for admission. The education credits do not be adopted as doctoral graduation credits.
9. Passed the doctoral candidacy eligibility exam.
10. Passed the doctoral thesis proposal exam.
11. Please refer as the newest graduate student handbook regarding other graduation requirements.
12. Doctoral students are required to take the courses involving in the ethics education of academic research, building the international course perform, "Taiwan Academic Ethics Education Resource Center" (<https://ethics.nctu.edu.tw/>) before applying for the doctoral degree exam.