

MINISTRY OF EDUCATION AND TRAINING  
QUY NHON UNIVERSITY

**DOCTORAL PROGRAM**

Level of education: **Doctoral**  
Major: **Algebra and number theory**  
Code: **9460104**  
Type of education: **Full-time**

*Binh Dinh, 2023*

## DOCTORAL PROGRAM

*(Issued together with Decision No. 2019/QĐ-ĐHQN dated July 31, 2023  
of the Rector of Quy Nhon University)*

Level of education:	<b>Doctoral</b>
Major:	<b>Algebra and number theory</b>
Code:	<b>9460104</b>
Type of education:	<b>Full-time</b>

### 1. PROGRAM OBJECTIVES (POs)

#### 1.1. General objectives

To train doctoral candidates who possess political qualities, ethics, professional responsibility, and a sense of service to the people; possess fundamental, core, advanced, in-depth, and applied theoretical knowledge in the field of Mathematics in general and the specialty of Algebra and Number Theory in particular; possess research skills and a comprehensive perspective on mathematical issues; possess the capacity for independent and creative research, the development of new knowledge, and the ability to detect and resolve emerging practical problems; possess the capacity to propose and organize scientific and technological research, and provide professional leadership in the field of Algebra and Number Theory; effectively meet the requirements in teaching, scientific research, and professional management, fulfilling the demand for high-quality human resources to serve scientific research, national development, and international integration.

The program aims to equip learners with fundamental knowledge and a deep understanding of Mathematics in general and the specialty of Algebra and Number Theory in particular. At the same time, it equips learners with the skills to research and perceive mathematical issues comprehensively, thereby enabling the capacity for self-directed research, solving practical problems, and effectively meeting the requirements in teaching, scientific research, and professional management at educational institutions, colleges, universities, and research institutes.

#### 1.2. Specific objectives

A Doctor of Philosophy in Algebra and Number Theory with a research orientation shall possess the following capabilities:

- **PO1:** Demonstrate solid knowledge of political science, along with strong political qualities, ethical standards, professional responsibility, and a commitment to serving the community.

- **PO2:** Possess fundamental, core, and foundational knowledge, as well as modern, advanced, in-depth, and applied theories in Mathematics in general and the specialty of Algebra and Number Theory in particular.

- **PO3:** Possess knowledge of organizational governance and the management of professional activities in the research and development of Mathematics in general and Algebra and Number Theory in particular.

- **PO4:** Master scientific theories, methods, and tools to conduct research and develop new knowledge in Mathematics, specifically in Algebra and Number Theory; possess skills in analytical reasoning and synthesis to creatively solve practical problems related to the field.

- **PO5:** Possess skills in critical thinking, analysis, and synthesis, with the capacity for self-directed in-depth research to acquire new knowledge; possess problem-posing and problem-solving skills; commit to lifelong learning and research.

- **PO6:** Demonstrate the ability to work independently and in teams; possess skills in professional management and leadership of research groups in Algebra and Number Theory; participate in discussions, disseminate research results, and supervise scientific research within the specialty.

- **PO7:** Maintain self-awareness and a clear understanding of the role and importance of self-study and independent literature review to pose and solve problems; continuously enhance professional qualifications through lifelong learning and research.

- **PO8:** Uphold professional ethics, taking individual and collective responsibility; demonstrate responsibility toward the community, society, the profession, and the environment.

## **2. EMPLOYMENT OPPORTUNITIES AND FURTHER STUDY PROSPECTS**

Graduates of the Doctoral program in Algebra and Number Theory will be capable of:

- **Teaching** at universities and colleges nationwide;
- **Serving as professional managers** at educational and training institutions, as well as educational management agencies;
- **Working as mathematical researchers** at research institutes, specialized mathematical centers, universities, and colleges;
- **Pursuing further studies** in post-doctoral training programs (Post-doc).

## **3. LEARNING OUTCOMES (PLOs)**

The program is designed to ensure that doctoral graduates achieve the following learning outcomes:

- **PLO1:** Understand and apply political science knowledge and fundamental, core mathematical principles to professional activities and daily life.

- **PLO2:** Evaluate modern, advanced, and specialized theories in Algebra and Number Theory, and assess the applicability of Mathematics in general, and Algebra and Number Theory in particular, to other scientific and technological fields.

- **PLO3:** Analyze scientific issues within the specialty of Algebra and Number Theory and provide expert-level situational solutions.

- **PLO4:** Apply core, foundational, and advanced theoretical knowledge to manage, organize, and operate professional activities in teaching, scientific research, and practical applications of Algebra and Number Theory.

- **PLO5:** Master and apply skills in critical thinking, analysis, synthesis, and evaluation of data and information using scientific methods; demonstrate effective teamwork to achieve common goals.

- **PLO6:** Proficiently apply scientific theories, methods, and tools to conduct research and development in the field of Algebra and Number Theory.

- **PLO7:** Update, synthesize, and analyze scientific issues; flexibly utilize research works to solve problems creatively and uniquely within the field of Algebra and Number Theory and address practical challenges.

- **PLO8:** Organize and manage professional activities and research groups in Algebra and Number Theory; participate in discussions, consultations, policy critiques, and the publication of research results; proficiently and creatively disseminate mathematical knowledge.

- **PLO9:** Apply expertise in Algebra and Number Theory to generate new ideas and knowledge in diverse contexts; provide self-direction and leadership in research and teaching; manage research projects with high responsibility for professional development; engage in academic exchange with domestic and international research groups (demonstrating English proficiency equivalent to the CEFR B2 level and utilizing computing tools to support research).

- **PLO10:** Self-orient and adapt to changing research environments; formulate professional conclusions and defend personal academic perspectives.

#### 4. ADMISSION REQUIREMENTS

- **Academic Qualifications:** Candidates must have graduated with a Master's degree or a specialized Level 7 training program in a relevant major; or have graduated with Honors (High Distinction) at the Bachelor's level (or equivalent and higher) in a relevant major; and must demonstrate research capacity and experience.

- **Language Proficiency:** Candidates must possess a foreign language proficiency of at least Level 4 according to the 6-level Foreign Language Proficiency Framework for Vietnam (or an equivalent level or higher).

+ **Candidates with a Master's degree in a relevant major:**

No	Doctoral Major	Master's degree requirements	Note
1	Algebra and number theory	Algebra and number theory (8460104)	<b>Category 1:</b> No supplementary courses required
		Applied mathematics (8460112)	
		Theory of Probability and Mathematical Statistics (8460106)	
		Mathematical analysis (8460104)	

	Geometry and topology (8460105)	
	Mathematical Foundations for Computer Science (8460110)	<b>Category 2:</b> Supplementary courses required (4 credits)
	Methods for elementary mathematics (8460113)	
	Data science (8904648)	

*Note: The supplementary courses for Category 2 candidates will be determined by the Scientific Council of the Faculty of Mathematics and Statistics for each individual candidate, based on the recommendations of the Supervisors. These courses are selected from the Elective sections of the List of Supplementary Courses or from the Doctoral-level courses.*

**+ Candidates with a Bachelor's degree (Honors/High Distinction) in a relevant major who are required to take supplementary courses:**

No	Doctoral Major	Bachelor's degree majors (Honors/High Distinction) requiring supplementary knowledge	Supplementary courses	Note
1	Algebra and number theory	<ul style="list-style-type: none"> <li>- Education in Mathematics (7140209)</li> <li>- Mathematics (7460101)</li> <li>- Applied Mathematics (7460112)</li> <li>- Mechanical Mathematics (7460115)</li> <li>- Mathematics and Computer Science (7460117)</li> <li>- Computational Science (7460107)</li> <li>- Data science (7460108)</li> </ul>	<p><b>+Fundamental Knowledge: 16 credits</b></p> <ul style="list-style-type: none"> <li>- Compulsory: 10 credits</li> <li>- Optional: 6 credits</li> </ul> <p><b>+Specialized knowledge: 14 credits</b></p> <ul style="list-style-type: none"> <li>- Compulsory: 8 credits</li> <li>- Optional: 6 credits</li> </ul>	<b>Category 3</b>

## 5. ADMISSION TARGETS

In accordance with the current Regulations on Enrollment and Doctoral training issued by the Ministry of Education and Training and Quy Nhon University. Specifically, this includes Categories 1, 2, and 3 as specified in Section 4.

## 6. PROGRAM DURATION AND TOTAL CREDITS

**6.1. Program duration:** From 03 years (36 months) to 04 years (48 months)

**6.2. Total credits:**

Program structure	Credits
<b>I. Supplementary courses</b>	<b>30</b>
<b>Fundamental knowledge</b>	<b>16</b>

Compulsory courses	10
Optional courses	6
<b>Specialized courses</b>	<b>14</b>
Compulsory courses	4
Optional courses	10
<b>II. Doctoral-level courses (including compulsory courses, elective courses, doctoral topics, and the literature review essay)</b>	<b>15</b>
<b>Doctoral-level courses</b>	<b>9</b>
Compulsory courses	3
Optional courses	6
<b>Doctoral topics</b>	<b>4</b>
Topic 1	2
Topic 2	2
<b>Literature review essay</b>	<b>2</b>
<b>III. Scientific research and Doctoral Dissertation</b>	<b>75</b>
Scientific research	<b>15</b>
Doctoral thesis	<b>60</b>
<b>Total</b>	
<b>PhD Candidates with a Master's Degree (Category 1)</b>	<b>90</b>
<b>PhD Candidates with a Master's Degree (Category 2)</b>	<b>94</b>
<b>PhD Candidates with a Bachelor's Degree (Category 3)</b>	<b>120</b>

## 7. TRAINING METHOD, GRADUATION REQUIREMENTS

### 7.1. Training method

The program is conducted under a credit-based system, in compliance with the current regulations of the Ministry of Education and Training and Quy Nhon University.

### 7.2. Graduation Recognition and Awarding of Doctoral Degree

PhD candidates shall be considered for graduation recognition and the awarding of a doctoral degree upon fulfilling the following requirements:

- a) The candidate's dissertation has been officially approved and passed by the University-level Doctoral Dissertation Evaluation Council;
- b) The candidate has submitted both printed and digital copies of the finalized dissertation to the University. This version must include the candidate's signature, the

certification of the supervisory team, and the confirmation from the Chairman of the Evaluation Council verifying that all required revisions and supplements (if any) have been completed;

c) The candidate has submitted both digital and printed copies of the dissertation abstract and the complete final dissertation to the National Library of Vietnam. These documents must bear the signature of the candidate, the signatures of the supervisors, and the official certification from the University.

## 8. ASSESSMENT METHODS, GRADING SCALE

### 8.1. Grading scale

A 10-point scale is used for all forms of assessment within the course.

### 8.2. Format, evaluation criteria, and scoring system

Implementation shall follow the current Regulations on Enrollment and Doctoral Training issued by the Ministry of Education and Training (MOET) and Quy Nhon University (QNU). Specific evaluation criteria are detailed within the syllabus of each individual course.

### 8.3. Assessment methods

Implementation shall follow the current Regulations on Enrollment and Doctoral Training issued by the Ministry of Education and Training (MOET) and Quy Nhon University (QNU). Specific evaluation criteria are detailed within the syllabus of each individual course.

## 9. PROGRAM CONTENT

No	Course code		Course name	Year	No. of credits				Prerequisite Course Code	Managing faculty	Note
	Letters	Numbers			Total	Theoretical	Assignment/Practical	Experimental/Practical			
<b>I. Supplementary courses</b>					<b>30</b>						
<b>I.1 Fundamental knowledge</b>					<b>16</b>						
<i>Compulsory</i>					<b>10</b>						
1	CSBB	502	Topological theory	1	2					Maths and Statistics	1
2	CSBB	503	Functional analysis	1	3				CSBB 502	Maths and Statistics	1

No	Course code		Course name	Year	No. of credits				Prerequisite Course Code	Managing faculty	Note
	Letters	Numbers			Total	Theoretical	Assignment	Experimental/Practical			
3	CSBB	505	Algebra 1	1	3					Maths and Statistics	1
4	CSBB	506	Algebra 2	1	2				CSBB 505	Maths and Statistics	1
<b>Optional (select 2 courses)</b>					<b>6</b>						
5	DSTC	501	Theory of Groebner basis	1	2					Maths and Statistics	1
6	DSTC	502	Homological algebra	1	2					Maths and Statistics	1
7	DSTC	503	Group cohomology	1	2					Maths and Statistics	1
8	DSTC	504	Theory of fields	1	2					Maths and Statistics	1
9	DSTC	505	Commutative algebra	1	2				CSBB 506	Maths and Statistics	1
<b>I.2 Specialized knowledge</b>					<b>14</b>						
<b>Compulsory</b>					<b>4</b>						
1	DSBB	501	Group theory	1	2				CSBB 506	Maths and Statistics	1

No	Course code		Course name	Year	No. of credits				Prerequisite Course Code	Managing faculty	Note
	Letters	Numbers			Total	Theoretical	Assignment	Experimental/Practical			
2	DSBB	502	Theory of rings and modules						CSBB 506, DSBB 508	Maths and Statistics	1
<b>Optional (select 5 courses)</b>					<b>10</b>						
3	DSTC	506	Category theory	1	2				DSBB 511	Maths and Statistics	1
4	DSTC	507	Matric computation	1	2				CSBB 506	Maths and Statistics	1
5	DSTC	508	Number theory	1	2					Maths and Statistics	1
6	DSTC	509	Group representation theory	1	2					Maths and Statistics	1
7	DSTC	510	Differential Galois theory	1	2					Maths and Statistics	1
8	DSTC	511	Arithmetic geometry	1	2					Maths and Statistics	1
9	DSTC	512	Lattice theory	1	2					Maths and Statistics	1
10	DSTC	513	Singularity theory	1	2					Maths and Statistics	1

No	Course code		Course name	Year	No. of credits				Prerequisite Course Code	Managing faculty	Note
	Letters	Numbers			Total	Theoretical	Assignment	Experimental/Practical			
<b>II. Doctoral-level courses</b>					<b>15</b>						
<b>II.1. Compulsory</b>					<b>3</b>						
1	DSBB	801	Advanced algebra	2	3				CSBB 506	Maths and Statistics	1
<b>II.2. Optional (select 2 courses)</b>					<b>6</b>						
2	DSTC	801	Differential topology	2	3					Maths and Statistics	1
3	DSTC	802	Theory of p-groups	2	3					Maths and Statistics	1
4	DSTC	803	Singular homology and cohomology	2	3					Maths and Statistics	1
5	DSTC	804	Real algebraic geometry	2	3					Maths and Statistics	1
6	DSTC	805	Matrix analysis	2	3					Maths and Statistics	1
7	DSTC	806	Matrix theory on commutative rings	2	3					Maths and Statistics	
8	DSTC	807	Computer algebra	2	3					Maths and Statistics	1
9	DSTC	808	Algebraic geometry	2	3					Maths and	1

No	Course code		Course name	Year	No. of credits				Prerequisite Course Code	Managing faculty	Note
	Letters	Numbers			Total	Theoretical	Assignment	Experimental/Practical			
										Statistics	
10	ĐSTC	809	Matrix computation	2	3					Maths and Statistics	
11	ĐSTC	810	Algebraic curves	2	3					Maths and Statistics	
12	ĐSTC	811	Quantum information theory	2	3					Maths and Statistics	
<b>III. Doctoral topics (select 2 topics)</b>					<b>4</b>						
1	ĐSCĐ	801	Local deformation theory	3	2					Maths and Statistics	1
2	ĐSCĐ	802	Equinormalizable deformations of isolated singularities	3	2					Maths and Statistics	1
3	ĐSCĐ	803	Modular invariant theory	3	2					Maths and Statistics	1
4	ĐSCĐ	804	Cohomological operators	3	2					Maths and Statistics	1
5	ĐSCĐ	805	Some Positivstellensatz and moment problems	3	2					Maths and Statistics	1

No	Course code		Course name	Year	No. of credits				Prerequisite Course Code	Managing faculty	Note
	Letters	Numbers			Total	Theoretical	Assignment	Experimental/Practical			
6	ĐSCĐ	806	Positivstellensatz and applications in polynomial optimization	3	2					Maths and Statistics	1
7	ĐSCĐ	807	Intersection theory	3	2					Maths and Statistics	
8	ĐSCĐ	808	Moduli spaces	3	2					Maths and Statistics	
9	ĐSCĐ	809	Elimination theory for differential algebras	3	2					Maths and Statistics	1
10	ĐSCĐ	810	Some inequalities involving operator means	3	2					Maths and Statistics	1
11	ĐSCĐ	811	Equinormalizable deformations of isolated singularities	3	2					Maths and Statistics	1
12	ĐSCĐ	812	Equisingular theory for curve singularities	3	2					Maths and Statistics	1
13	ĐSCĐ	813	QF rings and simple injective rings	3	2					Maths and Statistics	1
14	ĐSCĐ	814	Category $\sigma[M]$	3	2					Maths and Statistics	1

No	Course code		Course name	Year	No. of credits				Prerequisite Course Code	Managing faculty	Note
	Letters	Numbers			Total	Theoretical	Assignment	Experimental/Practical			
15	ĐSCĐ	815	Commutative algebra	3	2					Maths and Statistics	1
16	ĐSCĐ	816	Linear preserving problems for matrices on commutative rings	3	2					Maths and Statistics	
17	ĐSCĐ	817	Pseudospectra of matrix polynomials	3	2					Maths and Statistics	
18	ĐSCĐ	818	Schubert calculus	3	2					Maths and Statistics	
19	ĐSCĐ	819	Some invariants of algebraic varieties	3	2					Maths and Statistics	
20	ĐSCĐ	820	Some problems on simultaneous decomposition of matrices	3	2					Maths and Statistics	1
21	ĐSCĐ	821	Theory of one variable function fields	3	2					Maths and Statistics	
22	ĐSCĐ	822	Some quantum distance and divergences	3	2					Maths and Statistics	
23	ĐSCĐ	823	Quantum fidelities	3	2					Maths and	

No	Course code		Course name	Year	No. of credits				Prerequisite Course Code	Managing faculty	Note
	Letters	Numbers			Total	Theoretical	Assignment	Experimental/Practical			
									Statistics		
24	ĐSTL	801	Literature review essay	3	2				Maths and Statistics		
<b>IV. Scientific research and Doctoral Dissertation</b>					<b>75</b>						
<b>Total</b>											
<b>PhD Candidates with a Master's Degree (Category 1)</b>					<b>90</b>						
<b>PhD Candidates with a Master's Degree (Category 2)</b>					<b>94</b>						
<b>PhD Candidates with a Bachelor's Degree (Category 3)</b>					<b>120</b>						

## 10. TENTATIVE TEACHING PLAN

No	Course code	Course name	No. of credits	Tentative teaching plan (year)				Proposed lecturers
				1	2	3	4	
<b>I. Supplementary courses</b>								
<b>I.1</b>	<b>Fundamental knowledge</b>							
<i>Compulsory</i>								
1	CSBB 502	Topological theory	2	x				Huỳnh Minh Hiền Lương Đăng Kỳ Mai Thành Tân
2	CSBB 503	Functional analysis	3	x				Thái Thuần Quang Nguyễn Văn Đại
3	CSBB 505	Algebra 1	3	x				Lê Thanh Hiếu Lê Công Trình
3	CSBB 506	Algebra 2	2	x				Phạm Thùy Hương Nguyễn Bin
<i>Optional</i>								

No	Course code	Course name	No. of credits	Tentative teaching plan (year)				Proposed lecturers
				1	2	3	4	
5	ĐSTC 501	Theory of Groebner basis	2	x				Ngô Lâm Xuân Châu Nguyễn Bin
6	ĐSTC 502	Homological algebra	2	x				Trần Đình Lương
7	ĐSTC 503	Group cohomology	2	x				Trần Đình Lương Lê Minh Hà
8	ĐSTC 504	Theory of fields	2	x				Lê Thanh Hiếu Ngô Lâm Xuân Châu
9	ĐSTC 505	Commutative algebra	2	x				Phạm Thùy Hương Lê Công Trình
<b>I.2 Specialized knowledge</b>								
<b>Compulsory</b>								
1	ĐSBB 501	Group theory	2	x				Trần Đình Lương Phạm Thùy Hương
2	ĐSBB 502	Theory of rings and modules	2	x				Lê Thanh Hiếu Lê Công Trình
<b>Optional (select 5 courses)</b>								
3	ĐSTC 506	Category theory	2	x				Trần Đình Lương Phạm Thùy Hương
4	ĐSTC 507	Matrix computation	2	x				Lê Thanh Hiếu Lê Công Trình
5	ĐSTC 508	Number theory	2	x				Nguyễn Bin Trần Đình Lương
6	ĐSTC 509	Group representation theory	2	x				Trần Đình Lương Ngô Lâm Xuân Châu
7	ĐSTC 510	Differential Galois theory	2	x				Ngô Lâm Xuân Châu Lê Công Trình
8	ĐSTC 511	Arithmetic geometry	2	x				Trần Đình Lương Ngô Lâm Xuân Châu
9	ĐSTC 512	Lattice theory	2	x				Lê Công trình Ngô Lâm Xuân Châu
10	ĐSTC 513	Singularity theory	2	x				Phạm Thùy Hương Lê Công Trình

No	Course code	Course name	No. of credits	Tentative teaching plan (year)				Proposed lecturers
				1	2	3	4	
<b>II. Doctoral-level courses</b>								
<i>II.1. Compulsory</i>								
1	ĐSBB 801	Advanced algebra	3		x			Lê Công Trình Phạm Thùy Hương
<i>II.2. Phần tự chọn</i>								
2	ĐSTC 801	Differential topology	3		x			Ngô Lâm Xuân Châu Nguyễn Sum
3	ĐSTC 802	Theory of p-groups	3		x			Trần Đình Lương Nguyễn Sum
4	ĐSTC 803	Singular homology and cohomology	3		x			Trần Đình Lương Lê Công Trình
5	ĐSTC 804	Real algebraic geometry	3		x			Lê Công Trình Lê Thanh Hiếu
6	ĐSTC 805	Matrix analysis	3		x			Lê Thanh Hiếu Lê Công Trình
7	ĐSTC 806	Theory of matrices on commutative rings	3		x			Lê Công Trình Lê Thanh Hiếu
8	ĐSTC 807	Computer algebra	3		x			Ngô Lâm Xuân Châu Lê Thanh Hiếu
9	ĐSTC 808	Algebraic geometry	3		x			Phạm Thùy Hương Nguyễn Bin Lê Công Trình
10	ĐSTC 809	Matrix computation	3		x			Lê Thanh Hiếu Lê Công Trình
11	ĐSTC 810	Algebraic curves	3		x			Nguyễn Bin Phạm Thùy Hương Lê Công Trình
12	ĐSTC 811	Quantum information theory	3		x			Lê Công Trình
<b>III. Doctoral topics</b>								
1	ĐSCĐ 801	Local deformation theory	2			x		Lê Công Trình Phạm Thùy Hương

No	Course code	Course name	No. of credits	Tentative teaching plan (year)				Proposed lecturers
				1	2	3	4	
2	ĐSCĐ 802	On equinormalizable deformations	2			x		Lê Công Trình Phạm Thuỳ Hương
3	ĐSCĐ 803	Modular invariant theory	2			x		Trần Đình Lương Nguyễn Sum
4	ĐSCĐ 804	Cohomological operators	2			x		Trần Đình Lương Nguyễn Sum
5	ĐSCĐ 805	Some Positivstellensätze and moment problems	2			x		Lê Công Trình Lê Thanh Hiếu
6	ĐSCĐ 806	Positivstellensätze and applications in polynomial optimization	2			x		Lê Công Trình Lê Thanh Hiếu
7	ĐSCĐ 807	Intersection theory	2			x		Đặng Tuấn Hiệp Phạm Thuỳ Hương
8	ĐSCĐ 808	Moduli spaces	2			x		Đặng Tuấn Hiệp Phạm Thuỳ Hương
9	ĐSCĐ 809	Elimination theory for differential algebra	2			x		Ngô Lâm Xuân Châu Lê Công Trình
10	ĐSCĐ 810	Some inequalities involving operator means	2			x		Lê Công Trình Lê Thanh Hiếu
11	ĐSCĐ 811	Equinormalizable deformations for isolated singularities	2			x		Lê Công Trình Phạm Thuỳ Hương
12	ĐSCĐ 812	Equisingular deformations for curve singularities	2			x		Lê Công Trình Phạm Thuỳ Hương
13	ĐSCĐ 813	QF rings and simple injective rings	2			x		Trần Đình Lương Phạm Thuỳ Hương
14	ĐSCĐ 814	sigma[M] category	2			x		Trần Đình Lương Phạm Thuỳ Hương
15	ĐSCĐ 815	Commutative algebra	2			x		Phạm Thuỳ Hương Nguyễn Bin

No	Course code	Course name	No. of credits	Tentative teaching plan (year)				Proposed lecturers
				1	2	3	4	
								Lê Công Trình
16	ĐSCĐ 816	Linear preserving problems on commutative rings	2			x		Lê Công Trình Lê Thanh Hiếu
17	ĐSCĐ 817	Pseudospectra of matrix polynomials	2			x		Lê Công Trình Lê Thanh Hiếu
18	ĐSCĐ 818	Schubert calculus	2			x		Đặng Tuấn Hiệp Lê Công Trình
19	ĐSCĐ 819	Some invariants of algebraic varieties	2			x		Đặng Tuấn Hiệp Lê Công Trình
20	ĐSCĐ 820	Some problems on simultaneous decomposition of matrices	2			x		Đặng Tuấn Hiệp Lê Công Trình
21	ĐSCĐ 821	Theory of one variable algebraic functional fields	2			x		Ngô Lâm Xuân Châu Phạm Thuỳ Hương
22	ĐSCĐ 822	Some distance functions and quantum divergences	2			x		Lê Công Trình Lê Thanh Hiếu
23	ĐSCĐ 823	Quantum fidelities	2			x		Lê Công Trình Lê Thanh Hiếu
24	ĐSTL 801	Literature review essay	2			x		Supervisors
<b>III. Scientific research and Doctoral Dissertation</b>			<b>75</b>					
<b>Scientific research</b>			<b>15</b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>Supervisors</b>
<b>Doctoral Dissertation</b>			<b>60</b>				<b>x</b>	<b>Supervisors</b>

*Binh Dinh, July 31, 2023*

**RECTOR**

**Assoc. Prof. Dr. Do Ngoc My**