MINISTRY OF EDUCATION AND TRAINING
QUY NHON UNIVERSITY

UNDERGRADUATE PROGRAM

Level of education:		**Undergraduate**
Major	:	**Engineering Physics**
Specicality	:	***Integrated Circuit Fabrication, Packaging, and Testing Technology***
Code	:	**7520401**
Type of education :		**Full-time**

Binh Dinh, 2025

MINISTRY OF EDUCATION AND TRAINING
QUY NHON UNIVERSITY

SOCIALIST REPUBLIC OF VIET NAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

(Issued together with Decision No. 1634/QĐ-ĐHQN dated June 09, 2025 of the Rector of Quy Nhon University)

Level of education	:	**Undergraduate**
Major	:	**Engineering Physics**
Code	:	**7520401**
Specicality	:	***Integrated Circuit Fabrication, Packaging, and Testing Technology***
Type of education	:	**Full-time**

1. PROGRAM OBJECTIVES (POs)

1.1. General objectives

The program equips students with a solid foundation in physics, mathematics, chemistry, engineering, and modern technologies; develops creativity, problem-solving, communication and teamwork skills; and fosters lifelong learning and global adaptability. For the specialization, students gain in-depth knowledge of integrated circuit (IC) fabrication, packaging, and testing technologies, together with extensive hands-on experience, enabling them to analyze and propose viable engineering solutions for the semiconductor and chip industry. The program also aims to develop high-quality human resources capable of meeting the increasing demands of the domestic and international IC industry.

1.2. Specific objectives

Graduates of the Engineering Physics program will be able to:

+ PO1: Possess fundamental knowledge of mathematics, natural sciences, electronics, information technology, foreign languages, and in-depth knowledge of IC fabrication, packaging, and testing to develop complete manufacturing processes in these domains.

+ PO2: Possess knowledge of simulation, measurement, and analytical methods, and be proficient in the techniques and technological procedures used in IC fabrication, packaging, and testing for research and product development that meet reliability and efficiency standards.

+ PO3: Possess communication skills, digital competency, creative and critical thinking, entrepreneurial mindset, project-management abilities, and the capability to work independently and collaboratively in inclusive and cooperative environments.

+ PO4: Exhibit professional ethics, responsibility in work, the ability for lifelong learning, rapid adaptation to technological advancements, and a strong sense of social and environmental responsibility toward sustainable development.

2. EMPLOYMENT OPPORTUNITIES AND FURTHER STUDY PROSPECTS

Graduates of the Engineering physics program can take on the following positions:

- ✓ Wafer fabrication and semiconductor device manufacturing.
- ✓ Research and development of new materials and technologies in the semiconductor and chip industry.
- ✓ Product management, quality control, and development of semiconductor components.
- ✓ Supervision, consulting, inspection, maintenance, and technical guidance for the operation of high-tech equipment and machinery in semiconductor manufacturing.
- ✓ Lecturer or researcher positions at colleges, universities, and research institutes.
- ✓ Participation in exchange programs or postgraduate studies at reputable institutions domestically and internationally.

3. LEARNING OUTCOMES

Performance Indicators (PIs) used to assess the Program Learning Outcomes (PLOs) of the Engineering Physics program

Program Learning Outcomes	Performance Indicators
PLO1. Apply knowledge of mathematics, natural sciences, and engineering to solve technical problems related to IC fabrication, packaging, and testing.	PI 1.1. **Use** knowledge of mathematics, physics, and chemistry to perform calculations and process data for IC fabrication, packaging, and testing.
	PI 1.2. **Apply** engineering knowledge to address technical issues in IC fabrication, packaging, and testing.
PLO2. Apply knowledge of semiconductor materials, fabrication technologies, and electronic engineering to develop complete manufacturing processes in IC fabrication, packaging, and testing.	PI 2.1. **Select** appropriate materials, technologies, and techniques for IC fabrication and packaging processes.
	PI 2.2. **Apply** testing procedures to evaluate IC quality and performance.

PLO3. Apply knowledge of simulation methods, measurement techniques, and analytical approaches to the stages of IC fabrication, packaging, and testing for research and product development that meet reliability and efficiency standards.	PI 3.1. **Apply** simulation methods and measurement techniques to predict properties and develop semiconductor materials.
	PI 3.2. **Apply** measurement techniques and data analysis to monitor and evaluate IC quality.
PLO4. Perform fabrication techniques, material-processing procedures, and modern engineering tools in IC fabrication, packaging, and testing to ensure production efficiency and product quality.	PI 4.1. **Perform** appropriate fabrication techniques and material-processing procedures to optimize IC manufacturing efficiency.
	PI 4.2. **Use** modern engineering tools to inspect, evaluate, and control the quality of IC products.
PLO5. Demonstrate effective communication and teamwork skills, the ability to work independently and in teams, and creative and critical thinking to solve professional problems	PI 5.1. **Demonstrate** the ability to work independently and proactively to solve problems in the professional field.
	PI 5.2. **Demonstrate** effective communication and teamwork skills, along with creative and critical thinking, to solve professional problems.
PLO6. Demonstrate foreign-language proficiency equivalent to Level 3/6 of the Vietnamese Six-Level Foreign Language Proficiency Framework, and digital competency in professional and occupational activities.	PI 6.1. **Use** a foreign language in professional and occupational activities.
	PI 6.2. **Use** digital tools and digital technologies in professional and occupational activities.
PLO7. Demonstrate project-management capability and an entrepreneurial mindset.	PI 7.1. **Demonstrate** the ability to manage and coordinate projects.
	PI 7.2. **Demonstrate** an entrepreneurial mindset.
PLO8. Demonstrate professional ethics, responsibility in work, lifelong-learning ability, and adaptability to new technologies.	PI 8.1. **Demonstrate** professional ethics, responsibility in work, and a commitment to self-learning and continuous knowledge updating.

	PI 8.2. **Demonstrate** the ability for self-learning and rapid adaptation to changes in semiconductor and IC technologies.
PLO9. Demonstrate awareness of social responsibility and sustainable development in professional work, contributing to community development and environmental protection.	PI 9.1. **Apply** principles of sustainable development to professional work.
	PI 9.2. **Demonstrate** social responsibility, actively participate in community activities, and protect the environment.

4. PROGRAM DURATION AND TOTAL CREDITS

4.1. Program Duration: 04 years

4.2. Total credits: 135 credits (excluding Physical education and National defense–security education)

Program structure	Credits
General knowledge	**24**
Political science and Law	13
Foreign languages	7
Social sciences/Mathematics, Natural sciences–Environment, Management sciences	4
Professional knowledge	**111**
- Fundamental knowledge	28
- Specialized knowledge (if any)	42
- Supplementary knowledge: Professional training and Skills development	27
- Supplementary knowledge: Internship	8
- Graduation thesis, Alternative courses	6
Total	**135**

5. ADMISSION REQUIREMENTS

5.1. Admission eligibility

Admission eligibility follows the current Admission Regulations of Quy Nhon University and the Admission Regulations of the Ministry of Education and Training (MOET).

5.2. Admission methods

Implemented in accordance with the annual admission scheme of the University.

6. TRAINING METHOD, GRADUATION REQUIREMENTS

6.1. Training Method

Training mode: Credit-based system.

6.2. Graduation Requirements (professional requirements, prerequisite courses, foreign-language proficiency, and IT proficiency)

- Professional requirements: Complete all courses and credits prescribed in the training program.

- Physical Education (PE) and National Defense–Security Education (NDSE): Complete all PE courses and obtain the NDSE certificate.

- Foreign-language proficiency: Meet the University's foreign-language proficiency requirement.

- IT proficiency: Meet the University's information-technology proficiency requirement.

7. TEACHING METHODS AND LEARNING ASSESSMENT

7.1. Teaching Methods

- ***Lecturer preparation***

+ Lecturers study the program objectives, curriculum framework, and course syllabi to determine learning objectives and select suitable content and methods to ensure the highest teaching effectiveness.

+ Lecturers prepare all required teaching materials, including lecture notes and necessary instructional equipment. Lecture notes must clearly present the objectives, content, methods, materials, skills, sequence, and teaching activities. The objectives of each lesson and the course content must align with the overall objectives of the course, expected learning outcomes, and the training program. The instructional content in the lesson plan must be consistent with the content approved in the detailed syllabus by the Faculty Council and endorsed by the Rector. Learning activities must be closely aligned with teaching objectives and the training program.

+ Teaching methods employed must be appropriate to the course content and the learners' characteristics, and should combine various teaching approaches within a course.

- ***Teaching and learning approaches***

+ Direct instruction: Lecturing, presentations, guided questioning, and dialogue.

+ Indirect instruction: Guiding questions, problem-solving, project-based teaching/learning.

+ Experiential learning: Practice, laboratory work, internship, fieldwork.

+ Interactive teaching: Discussions, seminars, visual/interactive activities, academic advising and mentoring.

+ Self-study: Homework assignments, self-study topics, use of online tools, digital tools, and digital learning resources.

7.2. Learning Assessment

Implemented in accordance with the Regulations on Undergraduate Training issued under Decision No. 1487/QĐ-ĐHQN dated July 01, 2021 by the Rector of Quy Nhon University.

8. PROGRAM CONTENT

No	Course Code	Course Name	Semester	Number of credits	Class duration			Experimental / Practical	Others	Self-study time	Prerequisite Course Code	Managing Faculty	Note
					Theory	Practise	Tests						
I. General Knowledge				**24**									
I.1. Political science and Law				***13***									
01	1130299	Philosophy of Marxism and Leninism	1	3	40	0	10	0	0	95		FPLPA	
02	1130300	Political economics of marxism and leninism	2	2	27	0	6	0	0	62	1130299	FPLPA	
03	1130049	Fundamentals of Law	2	2	27	0	6	0	0	62	1130299	FPLPA	
04	1130301	Science socialism	3	2	27	0	6	0	0	62	1130300	FPLPA	
05	1130302	History of Vietnamese Communist Party	4	2	27	0	6	0	0	62	1130301	FPLPA	
06	1130091	Ho Chi Minh thought	5	2	27	0	6	0	0	62	1130302	FPLPA	
I.2. Physical Education and National Defense– Security Education				***12***									
Physical Education: Students choose one of the following seven groups.				***3***									
07	1120172	Physical Education 1 (Football 1)	1	1	4	0	0	26	0	21		FPE	
08	1120173	Physical Education 2 (Football 2)	2	1	4	0	0	26	0	21	1120172	FPE	
09	1120174	Physical Education 3 (Football 3)	3	1	4	0	0	26	0	21	1120173	FPE	
10	1120175	Physical Education 1 (Volleyball 1)	1	1	4	0	0	26	0	21		FPE	
11	1120176	Physical Education 2 (Volleyball 2)	2	1	4	0	0	26	0	21	1120175	FPE	
12	1120177	Physical Education 3 (Volleyball 3)	3	1	4	0	0	26	0	21	1120176	FPE	
13	1120178	Physical Education 1 (Basketball 1)	1	1	4	0	0	26	0	21		FPE	
14	1120179	Physical Education 2 (Basketball 2)	2	1	4	0	0	26	0	21	1120178	FPE	
15	1120180	Physical Education 3 (Basketball 3)	3	1	4	0	0	26	0	21	1120179	FPE	
16	1120181	Physical Education 1 (Badminton 1)	1	1	4	0	0	26	0	21		FPE	

No	Course Code	Course Name	Semester	Number of credits	Class duration			Experimental / Practical	Others	Self-study time	Prerequisite Course Code	Managing Faculty	Note
					Theory	Practise	Tests						
17	1120182	Physical Education 2 (Badminton 2)	2	1	4	0	0	26	0	21	1120181	FPE	
18	1120183	Physical Education 3 (Badminton 3)	3	1	4	0	0	26	0	21	1120182	FPE	
19	1120184	Physical Education 1 (Vietnamese Traditional Martial Arts 1)	1	1	4	0	0	26	0	21		FPE	
20	1120185	Physical Education 2 (Vietnamese Traditional Martial Arts 2)	2	1	4	0	0	26	0	21	1120184	FPE	
21	1120186	Physical Education 3 (Vietnamese Traditional Martial Arts 3)	3	1	4	0	0	26	0	21	1120185	FPE	
22	1120187	Physical Education 1 (Taekwondo Martial Arts 1)	1	1	4	0	0	26	0	21		FPE	
23	1120188	Physical Education 2 (Taekwondo Martial Arts 2)	2	1	4	0	0	26	0	21	1120187	FPE	
24	1120189	Physical Education 3 (Taekwondo Martial Arts 3)	3	1	4	0	0	26	0	21	1120188	FPE	
25	1120190	Physical Education 1 (Karatedo Martial Arts 1)	1	1	4	0	0	26	0	21		FPE	
26	1120191	Physical Education 2 (Karatedo Martial Arts 2)	2	1	4	0	0	26	0	21	1120190	FPE	
27	1120192	Physical Education 3 (Karatedo Martial Arts 3)	3	1	4	0	0	26	0	21	1120191	FPE	
National defense and security education				***9***									
28	1120168	National defense and security education 1	5	3	37	0	16	0	0	82		CNDSE	
29	1120169	National defense and security education 2	5	2	22	0	16	0	0	52		CNDSE	
30	1120170	National defense and security education 3	5	2	14	0	0	32	0	44		CNDSE	
31	1120171	National defense and security education 4	5	2	4	0	0	52	0	34		CNDSE	
I.3. Foreign Languages				***7***									
32	1090061	English 1	1	3	45	0	0	0	0	100		FFL	
33	1090166	English 2	2	4	60	0	0	0	0	135	1090061	FFL	
I.4. Social sciences/Mathematics, Natural sciences – Environment, Management sciences				***4***									
34	1150422	Start up	5	2	20	5	10	0	0	60	1130049	FFBBA	
35	2030003	Communication skills	2	2	18	10	4	0	0	63		FSSH	
II. Professional Knowledge				**111**									
II.1. Fundamental Knowledge				***28***									
36	1010481	Advanced mathematics 1	1	2	22	8	0	0	0	65		FMS	
37	1010482	Advanced mathematics 2	2	2	18	12	0	0	0	65	1010481	FMS	

No	Course Code	Course Name	Semester	Number of credits	Class duration			Experimental / Practical	Others	Self-study time	Prerequisite Course Code	Managing Faculty	Note
					Theory	Practise	Tests						
38	2020637	Physics 1	1	3	30	12	6	0	0	97		FNS	
39	2020638	Materials chemistry	1	2	25	5	0	0	0	65		FNS	
40	2020640	Physics 2	2	3	30	12	6	0	0	97	2020637 1010482	FNS	
41	2020645	Mathematics for materials science	3	2	24	6	0	0	0	65	1010482	FNS	
42	2020646	Surface science	3	2	30	0	0	0	0	65	2020638	FNS	
43	2020647	Modern physics	3	3	28	12	10	0	0	95	2020640	FNS	
44	2020648	Statistical physics	3	2	25	5	0	0	0	65	1010482 2020640	FNS	
45	1050415	Basic informatics	3	2	20	0	0	20	0	55		FIT	
46	1160811	Circuit theory	4	3	30	15	0	0	0	100	2020640	FET	
47	2020652	Mechanics in Semiconductor technology	4	2	28	0	4	0	0	63	2020640	FNS	
II.2. Major knowledge, Specialized knowledge				***42***									
II.2.1. Major knowledge				***26***									
II.2.1a. Compulsory				*22*									
48	2020649	Quantum mechanics	3	2	20	8	4	0	0	63	2020647	FNS	
49	2020653	Analog electronics	4	3	36	7	4	0	0	98	1160811	FNS	
50	2020654	Solid state physics	4	3	36	6	6	0	0	97	2020645 2020648 2020649	FNS	
51	2020655	Computational simulations of Materials	4	2	28	0	4	0	0	63	1050415	FNS	
52	2020656	Thin film technology	4	2	22	4	8	0	0	61	2020654	FNS	
53	2020658	Sensors and Measurement techniques	5	2	28	0	4	0	0	63	2020654	FNS	
54	2020659	Integrated circuit technology	5	3	42	0	6	0	0	97	2020654	FNS	
55	2020660	Synthesis and Characterization of Semiconductor materials and Device	5	3	40	4	2	0	0	99	2020656	FNS	
56	2020665	Digital electronics	6	2	25	5	0	0	0	65	2020653	FNS	
II.2.1b. Optional				*4/8*									
57	1160816	Digital IC design laboratory using HDL	7	2	25	5	0	0	0	65	1160811 2020665	FET	
58	1050416	Machine learning for materials science	7	2	20	10	0	0	0	65	1050415	FIT	
59	2020681	Applied electrochemistry	7	2	25	5	0	0	0	65	2020638 2020646	FNS	

No	Course Code	Course Name	Semester	Number of credits	Class duration			Experimental / Pratical	Others	Self-study time	Prerequisite Course Code	Managing Faculty	Note
					Theory	Practise	Tests						
60	2020682	Thermodynamics of chemical processes	7	2	20	6	8	0	0	65	2020638 2020646	FNS	
II.2.2. Specialized knowledge				***16***									
IC Fabrication, Packaging, and Testing Technology				***16***									
II.2.2a. Compulsory				*10*									
61	2020661	Semiconductor manufacturing technologies	5	2	26	2	4	0	0	63	2020653 2020659	FNS	
62	2020666	Introduction to Integrated circuit packaging	6	2	22	8	0	0	0	65	2020659 2020661	FNS	
63	2020667	Thermo-Mechanical Issues in Semiconductor packaging	6	2	22	6	4	0	0	63		FNS	
64	2020668	Introduction to Integrated circuit testing	6	2	15	10	10	0	0	60		FNS	
65	1160813	Introduction to IC design	7	2	25	5	0	0	0	65	1160811 2020665	FET	
II.2.2b. Optional				*6/12*									
66	2020671	Advanced integrated circuit fabrication technology	6	2	28	0	4	0	0	63	2020659	FNS	
67	2020672	Materials and Processes in Semiconductor technology	6	2	24	4	4	0	0	63	2020654	FNS	
68	2020673	Photonic/Electro-optic packaging technology	6	2	15	10	10	0	0	60		FNS	
69	2020674	Semiconductor Advanced packaging technology	6	2	22	8	0	0	0	65		FNS	
70	2020675	Fundamentals of IC inspection and reability engineering	6	2	22	8	0	0	0	65		FNS	
71	2020676	Mixed signal IC testing	6	2	15	10	10	0	0	60		FNS	
II.3. Supplementary knowledge				***35***									
II.3.1. Professional training				***27***									
II.3.1a. Compulsory				*27*									
72	2020639	Material chemistry Practice	1	1.5	0	0	0	45	0	25	2020638	FNS	
73	2020641	: Laboratory safety techniques	2	2	22	0	8	8	0	57		FNS	
74	2020642	Physics Experiments 1	2	1.5	3	0	0	39	0	28	2020637 2020641	FNS	
75	2020650	Physics Experiments 2	3	1.5	0	0	0	45	0	25	2020640 2020641 2020650	FNS	
76	2020651	Career orientation	3	1	0	0	0	0	45	15	2020641	FNS	
77	2020657	Specialized IT Practice	4	1.5	0	0	0	45	0	25	1050415 2020649	FNS	
78	1160812	Circuit theory Laboratory	4	1	0	0	0	30	0	15	1160811	FET	

No	Course Code	Course Name	Semester	Number of credits	Class duration			Experimental / Pratical	Others	Self-study time	Prerequisite Course Code	Managing Faculty	Note
					Theory	Practise	Tests						
79	2020662	Fabrication practices and Characterization of Semiconductor materials	5	1.5	0	0	0	45	0	25	2020654 2020656 2020660	FNS	
80	2020663	Semiconductor device Fabrication and Characterization laboratory	5	1.5	0	0	0	45	0	25	2020641 2020653 2020660	FNS	
81	2020664	Measurement and Sensor practice	5	1	0	0	0	30	0	15	2020658	FNS	
82	2020669	Product quality management	6	2	28	0	4	0	0	63		FNS	
83	2020670	Chip Packaging and Testing practice (1)	6	1.5	0	0	0	45	0	25	2020652 2020666 2020667 2020668	FNS	
84	1160814	Analog and Digital electronics experiment	6	2	0	0	0	60	0	35	2020653 2020665	FET	
85	1160815	IC design laboratory	7	1	0	0	0	30	0	15	1160813 1160816	FET	
86	2020677	Specialized English (*English for Semiconductor Technology*)	7	2	15	10	10	0	0	60	1090061 1090166	FNS	
87	2020678	Advanced chip Packaging and Testing practice	7	1.5	0	0	0	45	0	25	2020667 2020670	FNS	
88	2020679	Research methodology	7	2	28	0	4	0	0	63	2020677	FNS	
89	2020683	Project management	8	1	12	3	0	0	0	30	2020669 2020680	FNS	
II.3.2. Internships				***8***									
90	2020680	Professional internship	7	4	0	0	0	0	180	15	2020670 2020678	FNS	
91	2020684	Graduation internship	8	4	0	0	0	0	180	15	2020678 2020680	FNS	
II.4. Graduation Thesis, Alternative courses				***6***									
92	2020685	Graduation thesis	8	6	0	0	0	0	270	25	2020677 2020679 2020680 2020684	FNS	
93	2020686	*Alternative course:* Graduation Project	8	6	0	0	0	0	270	25	2020677 2020679 2020680 2020684	FNS	

9. TENTATIVE TEACHING PLAN

Semester 1:

No.	Course Code	Course name	Number of credits	Class duration			Experimental / Practical	Others	Self-study time	Prerequisite Course Code	Managing Faculty	Note
				Theory	Practise	Tests						
1	1130299	Philosophy of Marxism and Leninism	3	40	0	10	0	0	95		FPLPA	
2	1090061	English 1	3	45	0	0	0	0	100		FFL	
3	1010481	Advanced mathematics 1	2	22	8	0	0	0	65		FMS	
4	2020638	Materials chemistry	2	25	5	0	0	0	65		FNS	
5	2020637	Physics 1	3	30	12	6	0	0	97		FNS	
6	2020639	Material chemistry Practice	1.5	0	0	0	45	0	25	2020638	FNS	
7	2030003	Communication skills	2	18	10	4	0	0	63		FSSH	
Total:			**16.5**									

Semester 2:

No.	Course Code	Course name	Number of credits	Class duration			Experimental / Practical	Others	Self-study time	Prerequisite Course Code	Managing Faculty	Note
				Theory	Practise	Tests						
1	1130300	Political economics of marxism and leninism	2	27	0	6	0	0	62	1130299	FPLPA	
2	1130049	Fundamentals of Law	2	27	0	6	0	0	62	1130299	FPLPA	
3	1090166	English 2	4	40	20	0	0	0	135	1090061	FFL	
4	1010482	Advanced mathematics 2	2	18	12	0	0	0	65	1010481	FMS	
5	2020640	Physics 2	3	30	12	6	0	0	97	2020637 1010482	FNS	
6	2020641	Laboratory safety techniques	2	22	0	8	8	0	57		FNS	
7	2020642	Physics experiments 1	1.5	3	0	0	39	0	28	2020637 2020641	FNS	
Total:			**16.5**									

Semester 3:

No.	Course Code	Course name	Number of credits	Class duration			Experimental / Practical	Others	Self-study time	Prerequisite Course Code	Managing Faculty	Note
				Theory	Practise	Tests						
1	1130301	Science socialism	2	27	0	6	0	0	62	1130300	FPLPA	
2	2020645	Mathematics for materials science	2	24	6	0	0	0	65	1010482	FNS	

3	2020646	Surface science	2	30	0	0	0	0	65	2020638	FNS	
4	2020647	Modern physics	3	30	12	6	0	0	97	2020640	FNS	
5	2020648	Statistical physics	2	25	5	0	0	0	65	1010482 2020640	FNS	
6	1050415	Basic informatics	2	20	0	0	20	0	55		FIT	
7	2020649	Quantum mechanics	2	20	8	4	0	0	63	2020647	FNS	
8	2020650	Physics experiments 2	1.5	0	0	0	45	0	25	2020640 2020641 2020650	FNS	
9	2020651	Career orientation	1	0	0	0	0	45	0	2020641	FNS	
Total:			**17.5**									

Semester 4:

No.	Course Code	Course name	Number of credits	Class duration			Experimental/ Pratical	Others	Self-study time	Prerequisite Course Code	Managing Faculty	Note
				Theory	Practise	Tests						
1	1130302	History of Vietnamese Communist Party	2	27	0	6	0	0	62	1130301	FPLPA	
2	1160811	Circuit theory	3	30	15	0	0	0	100	2020647	FET	
3	2020652	Mechanics in Semiconductor technology	2	28	0	4	0	0	63	2020640	FNS	
4	2020653	Analog electronics	3	36	7	4	0	0	98	1160811	FNS	
5	2020654	Solid state physics	3	36	6	6	0	0	97	2020645 2020648 2020649	FNS	
6	2020655	Computational simulations of Materials	2	28	0	4	0	0	63	1050415 2020649	FNS	
7	2020656	Thin film technology	2	20	4	8	4	0	59		FNS	
8	2020657	Specialized IT Practice	1.5	0	0	0	45	0	25	1050415 2020649	FNS	
9	1160812	Circuit theory Laboratory	1	0	0	0	30	0	15	1160811	FET	
Total:			**19.5**									

Semester 5:

No.	Course Code	Course name	Number of credits	Class duration			Experimental/ Pratical	Others	Self-study time	Prerequisite Course Code	Managing Faculty	Note
				Theory	Practise	Tests						
1	1130091	Ho Chi Minh thought	2	27	0	6	0	0	62	1130302	FPLPA	
2	1150422	Start up	2	20	5	10	0	0	60	1130049	FFBBA	
3	2020658	Sensors and Measurement techniques	2	28	0	4	0	0	63	2020654	FNS	
4	2020659	Integrated circuit technology	3	42	0	6	0	0	97	2020654	FNS	
5	2020660	Synthesis and Characterization of	3	40	4	2	0	0	99	2020656	FNS	

		Semiconductor materials and Device										
6	2020661	Semiconductor manufacturing technologies	2	26	2	4	0	0	63	2020653 2020659	FNS	
7	2020662	Fabrication practices and Characterization of Semiconductor materials	1.5	0	0	0	45	0	25	2020654 2020656 2020660	FNS	
8	2020663	Semiconductor devices Fabrication and Characterization laboratory	1.5	0	0	0	45	0	25	2020641 2020653 2020660	FNS	
9	2020664	Measurement and Sensor practice	1	0	0	0	30	0	15	2020658	FNS	
Total:			**18**									

Semester 6:

No.	Course Code	Course name	Number of credits	Class duration			Experimental/ Pratical	Others	Self-study time	Prerequisite Course Code	Managing Faculty	Note
				Theory	Practise	Tests						
1	2020665	Digital electronics	2	25	5	0	0	0	65	2020653	FET	
2	2020666	Introduction to Integrated circuit packaging	2	22	8	0	0	0	65	2020659 2020661	FNS	
3	2020667	Thermo-Mechanical Issues in Semiconductor packaging	2	22	6	4	0	0	63		FNS	
4	2020668	Introduction to Integrated circuit testing	2	15	10	10	0	0	60		FNS	
5	2020670	Chip Packaging and Testing practice 1	1.5	0	0	0	45	0	25	2020652 2020666 2020667 2020668	FNS	
6	1160814	Analog and Digital electronics experiment	2	0	0	0	60	0	35	2020653 2020665	FET	
7	2020669	Product quality management	2	28	0	04	0	0	63		FNS	
Choose one of the following two courses:			***2***									
8	2020671	Advanced integrated circuit fabrication technology	2	28	0	4	0	0	63	2020659	FNS	
9	2020672	Materials and Processes in Semiconductor technology	2	24	4	4	0	0	63	2020654	FNS	
Choose one of the following two courses:			***2***									

10	2020673	Photonic/Electro-optic packaging technology	2	15	10	10	0	0	60		FNS	
11	2020674	Semiconductor Advanced packaging technology	2	22	8	0	0	0	65		FNS	
Choose one of the following two courses:			***2***									
12	2020675	Fundamentals of IC inspection and reability engineering	2	22	8	0	0	0	65		FNS	
13	2020676	Mixed signal IC testing	2	15	10	10	0	0	60		FNS	
Total:			**19.5**									

Semester 7:

No.	Course Code	Course name	Number of credits	Class duration			Experimental/ Pratical	Others	Self-study time	Prerequisite Course Code	Managing Faculty	Note
				Theory	Practise	Tests						
1	1160813	Introduction to IC design	2	25	5	0	0	0	65	1160811 2020665	FET	
2	2020677	English for Semiconductor Technology	2	15	10	10	0	0	60	1090061 1090166	FNS	
3	2020679	Research methodology	2	28	0	4	0	0	63	2020677	FNS	
4	2020678	Advanced Chip Packaging and Testing Practice	1.5	0	0	0	45	0	25	2020670	FNS	
5	1160815	IC design laboratory	1	0	0	0	30	0	15	1160813 1160816	FET	
6	2020680	Professional internship	4	0	0	0	0	180	15	2020670 2020678	FNS	
Choose one of the following two courses:			***2***									
7	1160816	Digital IC design laboratory using HDL	2	25	5	0	0	0	65	1160811 2020665	FET	
8	1050416	Machine learning for materials science	2	20	10	0	0	0	65	1050415	FIT	
Choose one of the following two courses:			***2***									
9	2020681	Applied electrochemistry	2	25	5	0	0	0	65	2020638 2020646	FNS	
10	2020682	Thermodynamics of chemical processes	2	20	6	8	0	0	61	2020638 2020646	FNS	
Total:			**16.5**									

Semester 8:

No.	Course Code	Course name	Number of credits	Class duration			Experimental/ Pratical	Others	Self-study time	Prerequisite Course Code	Managing Faculty	Note
				Theory	Practise	Tests						
1	2020683	Project management	1	12	2	2	0	0	29	2020669 2020680	FNS	
2	2020684	Graduation internship	4	0	0	0	0	180	15	2020680	FNS	
Graduation thesis												
3	2020685	Graduation thesis	6	0	0	0	0	270	25	2020677 2020679 2020680 2020684	FNS	
Alternative courses												
4	2020686	Graduation project	6	0	0	0	0	270	25	2020677 2020679 2020680 2020684	FNS	
Total:			**11**									

10. GUIDELINES FOR PROGRAM IMPLEMENTATION

- This training program applies to Engineering Physics students admitted in 2025.

- The training process is based on the designed curriculum, the program objectives, intended learning outcomes, target learners, workforce requirements, and specific training needs. For optional courses, depending on actual development trends and societal demands, the Faculty will advise students in selecting the most appropriate courses.

- The Head of Faculty is responsible for coordinating and guiding the development of detailed course syllabi to ensure that the objectives, content, and requirements are met and consistent with the needs of learners and society.

- The training program is reviewed and updated periodically (every 2–3 years) to align with advances in Engineering Physics, the specialization in IC fabrication, packaging, and testing technology, and the socio-economic development needs./.

Binh Dinh, June 09, 2025

DEAN OF FACULTY	***HEAD OF TRAINING OFFICE***	***BY THE DELEGATION OF THE RECTOR*** **VICE-RECTOR**
Assoc. Prof. Dr. Phan Thanh Hai	**Dr. Le Xuan Vinh**	**Dr. Dinh Anh Tuan**