THE UNIVERSITY OF DANANG
THE UNIVERSITY OF SCIENCE AND EDUCATION

TRAINING PROGRAM

MAJOR: BACHELOR IN CHEMICAL EDUCATION

ENGLISH NAME: BACHELOR IN CHEMISTRY TEACHER EDUCATION

MAJOR CODE: 7140212

SECTOR: NATURAL SCIENCES

FACULTY OF MANAGEMENT: FACULTY OF CHEMISTRY

LEVEL: UNDERGRADUATE

FORM OF TRAINING: FORMAL

Da Nang, 7/2021

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND EDUCATION

SOCIALIST REPUBLIC OF VIET NAM
Independence - Freedom - Happiness

TRAINING PROGRAM

(Issued in accordance wit decision No.1168 of the university of science and education dated 15/07/2021 of the Principal of the University of Science and Education, University of Da Nang)

A. GENERAL INFORMATION

- The Bachelor of Chemistry Pedagogy training program is issued and applied at the University of Education according to the decision No. 1168 of the University of Science and Education – The University of Da Nang dated July 15, 2021, of the Principal Principal of the University of Science and Education – University of Da Nang.

- The revised bachelor's degree program in Chemistry Pedagogy in 2021 aims to develop some of the training disciplines of the University of Education meet national standards; improve the quality of university training; meet the requirements of fundamental and comprehensive reform of Vietnamese education.

- The undergraduate training program for the Bachelor of Chemistry Pedagogy is inherited from the previous Chemistry pedagogical training program and is supplemented, developed in response to the new requirements of general education. The specialized subjects of the undergraduate program bachelor's degree in Chemistry pedagogy are taught by highly qualified lecturers of the Faculty of Chemistry.

- The Faculty of Chemistry is constantly improving and developing its facilities as well as educational and research activities to meet the different needs of the Chemistry field. The Faculty of Chemistry has been providing students with a comprehensive educational environment both theoretically and practically, encouraging active, proactive, creative, and collaborative learning.

Table 1. *General information about the training program*

1. Training program name (Vietnamese):	Cử nhân sư phạm Hoá học
2. Training program name (English):	Bachelor in Chemistry Teacher Education
3. Level of training:	University
4. Training industry code:	7140212

5. Subjects of admission:	- Direct admission is high school students who have won national and international awards; - Candidates' national high school graduation results take scores from high to low; - Subjects consider high school transcripts in order of high to low; - Nationwide admission.
6. Duration of training:	4 years (8 semesters).
7. Type of training:	Formal.
8. Minimum cumulative credits:	130
9. Management Faculty:	Faculty of Chemistry
10. Language:	Vietnamese
11. Website:	http://hoa.ued.udn.vn
12. Scale	4 – point scale
13. Graduation conditions:	Students are considered for graduation recognition when they meet the following conditions: - Accumulating a sufficient number of modules and blocks of the training program: 130; - The cumulative overall average of the whole course is 2.0 or higher; - Have certificates in defense education and physical education; - Meet foreign language output standards; - Meet information technology output standards.
14. Diploma:	Bachelor of Education.
15. Job position:	- Working as a teacher of Chemistry and Natural Sciences at junior schools, high school, continuing education centers, professional high

	schools, vocational colleges, universities… studied Chemistry; - Working at departments and sectors such as: Department of Education, Department of Science, Technology and Environment, production facilities such as cement production, metallurgy… and industries that need to use Chemistry knowledge; - Working as a research officer at research centers and institutes related to Chemistry.
16. Ability to improve qualifications:	Graduates can study at master's and doctoral levels at home and abroad.
17. Matching training program:	Chemistry Pedagogy program- Vinh University of Education Chemistry Pedagogy program- Thai Nguyen University of Sciences. Science Education program: Chemistry, Bachelor of Science, Drexel University, USA
18. Time to update the training program:	20/07/2021

B. EDUCATIONAL PHILOSOPHY, VISION, AND MISSION

I. Philosophy of education

Educational philosophy is of particular importance in the strategy of education & training development. In universities, the development of an educational philosophy in accordance with practice and development trends will create an important premise to build the right educational and training goals, strategies, and tasks.

The University of Science and Education – University of Da Nang is an institution for training and fostering teachers, educational administrators and high – quality scientific staff associated with the needs of human resource development of the Central region, the Central Highlands and whole country. The University of Science and Education – University of Da Nang has the mission of training high – quality human resources, in which teachers are the core; scientific research and technology transfer in the fields of educational sciences, natural sciences and technology, social sciences and humanities; serving the development of the country, focusing on the Central – Central Highlands region. The Unversity of Science and Education - University of Dang's vision is to become a national key pedagogical school by 2030; training, scientific research to meet southeast Asia quality standards in a number of key areas; effective consultation

on guidelines and policies on education and training. The Unversity of Science and Education - University of Dang with educational philosophy:

"***Comprehensive – Liberal – Creative - Practical***"

Towards the goal of training people comprehensively, socially responsible, serving the community, promoting their capacity and bravery in the professional field and social life; constantly exploring and researching creatively. Specifically:

- **Comprehensive education**: Comprehensiveness is understood as all sides, all aspects and comprehensive education is the process of imparting knowledge, experiences, and skills… while fostering the necessary moral qualities and prepare learners to go into independent working life, contributing to building and protecting the country. From there, it is aimed that the trained product must have a full range of Morality – Intellectual – Physical – Aesthetics elements, meet the requirements of national development and international integration. Specifically: (1) Moral education is a purposeful, systematic pedagogical impact to foster students' ethical qualities (standards of behaviour) in accordance with social requirements, especially, teacher ethics for students of bachelor's degrees in pedagogy. (2) Intellectual education is an educational activity in which the educator organizes activities for students to occupy the system of cultural knowledge, science and technology and develop corresponding skills and techniques, develop their minds and the intelectual capacity of students; help students have the capacity to fullfill the professional requirements of professional activities. (3) Education is purposeful, contentful, methodical and organized impact of educators on educational objects to improve health, formation, and development of physical elements for learners. (4) Education is the education of beauty, the application of the beauty of art, of nature and the beauty of life and beauty of social life to foster aesthetic views and the ability to perceive, enjoy and create the right beauty for students.

To implement the philosophy of comprehensive education, the school has organized the implementation of an educational program to ensure the implementation of comprehensive educational contents for students.

- ***Liberal education***: Education aims to build learners a broad knowledge base, providing the necessary skills to help acquire and apply to many different fields, and have deep expertise in a certain field.

Association of American Colleges and Universities describes liberal education as "an educational philosophy that provides individuals with a broad knowledge base and transferable skills, and a strong sense of values, morality, and involvement in civic life…". The scope of liberal education is often pluralistic and global; it may include a general education program that provides access to a variety of academic areas and multiple learning strategies, besides an intensive study program in a certain field of

study.

With the philosophy of liberal education, the University of Education and Science – University of Da Nang is following the trend of effective and effective access to advanced education in the world. Liberal education creates a generation of students who are not only strong in professional knowledge but also have the skills of global citizens to adapt and solve problems effectively, apply to many different areas of life.

- Creative education: Education towards the formation of creative, independent thinking is the basis to create scientific innovations and inventions in research and teaching of learners. Creativity is considered a unique characteristic of man, and is a necessary requirement for scientists, aiming to maximize the ability of learners through research activities and implementing the application of research in real life.

Currently with globalization and the rapid development of sicence and technology so for learners it is more important not to accumulate an extensive amount of knowledge, but to know how to exploir it, process information in solving problems, that is, creative thinking skills. Therefore, the University of Education and Science – University of Da Nang's innovative educational philosophy follows the trend in the philosophy of higher education in Vietnam in particular and the world in general.

To implement the creative educational philosophy, the school needs to implement: (1) Establish an educational environment to encourage and facilitate the formation and promotion, develop the creative capacity of learners; students are equipped with the knowledge and skills of Creative Learning, creative methodology from simple to complex; accordingly, 3/ Content of training programs of disciplines and the content of the subjects is composed in the direction of stimulating creative thinking with creative questions suitable for the learner's level; 4/ Lecurers: inspire creativity, passion for creative and open up creative thinking for learners in appropriate subjects; 5/ Knowledge, skills and technologies are transmitted to learners with the view that all knowledge, skills and technologies taught have limitations and shortcomings, incomplete. 6/ Evaluating educational results towards assessing students' creativity and application in practical professional activities.

- **Practical education:** Education towards the formation of practical ability, practical application, effective knowlegde accessed from the school in the process of studying and working after graduation. The philosophy of practical education helps to concretize and implement the principle of education: "Learning goes hand in hand with practics"; "education is associated with productive labor".

Practice is defined as "An occupation that brings practical benefits to life" (Hoang Phe). Since then, the philosophy of practical education is understood as training process in which both the teacher and the learner are clearly aware of the purpose of their

teaching and learning: substantive teaching. Substantive learning so that after graduation learners have necessary capacity and qualities to live and work.

To implement the philosophy of practical education, the school needs to develop a training program to enhance practical and practical activities, practical, professional experience at practical labor facilities; the content of subjects in the training program should closely follow the requirements of practice of social and professional life; using active teaching strategies and teaching methods towards the formation of competencies for practical application of professional activities. Practical education philosophy focusing on training quality, linking education with practice, labor needs, taking the effciency and quality of learners' activities as a measure. Oriented educational philosophies will help the school carry out educational and training activities effectively, achieving the set educational goals such as:

- Comprehensive professional knowledge, in-depth understanding of the priciples and laws of nature – society;

- Soft skills, creativity and adaptability to changing work environments;

- Capacity of education and professional development;

- Ethics, professional qualities, good health, sense of community service…

II. Vision

Vision of the University of Education and Science – University of Da Nang: By 2030, the school will become a national key pedagogical school, training, and scientific research to meet quality standard in Southeast Asia in a number of key areas; effective consultation of school owners and policies on education and training.

III. Mission

Mission of the University of Education and Science: The University of Education and Science trains high-quality human resources, in which teacher training is the core; scientific research, technology transfer in a field of educational sciences, natural sciences and technology, social sciences and humanities, serving the development of thẻ country, the focus is on the Central – Central Highlands region.

C. OBJECTIVES AND OUTPUT STANDARDS OF THE TRAINING PROGRAM

I. Program Objectives (POs)

1. General objectives

1. General objectives

To train bachelors in Chemistry teacher education with professional expertise and research experience to teach, work and do management task at educational, research, or enterprise institutions in fields related to chemistry, with ability to start a business, to

adapt to a chang in working environment, and to have life-long learning skill and qualities, and ethics of a teacher.

2. Specific objectives

The University of Danang – University of Science and Education trains Chemistry Teacher Education bachelors, who:

- **PO1:** Have knowledge of political science, natural science, professional knowledge of chemistry, and educational science for professional activities and life-long learning.

- **PO2:** Can organize teaching, education, and scientific research activities in the fields of Chemistry and Natural Sciences.

- **PO3:** Have soft skills, creative thinking, inspiring ability, and adaptability to a change in working environment.

- **PO4:** Have the qualities and ethics of a teacher, sense of community serving, and entrepreneurship spirit.

I. Program Learning Outcomes (PLOs)

Students who graduate from the Bachelor program in Chemistry Teacher Education of University of Science and Education - The University of Danang be able to:

- **PLO1:** Apply knowledge of political science, mathematics, natural science, and educational science to professional activities.
    - PI 1.1: Use basic knowledge of political science in career and life.
    - PI 1.2. Apply basic knowledge of mathematics and natural sciences in explaining career-related problems.
    - PI 1.3: Apply the laws and theorems of chemistry to explain theoretical and experimental problems related to the field of chemistry and natural sciences.

- **PLO2:** Organize teaching and educational activities in direction of developing learners' quality and competency.
    - PI 2.1: Analyse and develop the high school chemistry curriculum in the 2018 high school curriculum.
    - PI 2.2. Develop plans to organize teaching and educational activities in chemistry in direction of developing learners' quality and competency.

- PI 2.3: Organize the teaching process using active teaching methods.
- PI 2.4: Flexibly use teaching facilities, testing, and assessing methods in the teaching process of chemistry.

- **PLO3:** Apply information technology and foreign languages in the field of chemistry.
  - PI 3.1: Apply basic information technology skills as prescribed in Circular 03/2014/TT-BTTTT in teaching, scientific research, and professional activities.
  - PI 3.2: Use other complementary softwares for analysis, data processing, virtual experiment design, online teaching, and professional activities.
  - PI 3.3. Use foreign languages at the minimum of level 3 capacity according to the 6-level Foreign Language Competency Framework for Vietnam in teaching, scientific research and professional activities.

- **PLO4:** Develop a positive educational environment.
  - PI 4.1: Organize class activities in high school.
  - PI 4.2: Counsel school psychology for students.
  - PI 4.3. Solve pedagogical behavior problems.

- **PLO5:** Carry out scientific research in education, basic science in the fields of chemistry and natural science.
  - PI 5.1: Proficiently perform basic experimental techniques in the field of chemistry and operate common equipment in chemical research.
  - PI 5.2: Analyze specialized research data in a scientific and reasonable way.
  - PI 5.3: Design research projects in the field of educational science, and basic science of Chemistry.

- **PLO6:** Demonstrate critical thinking, creative thinking, and complex problem-solving abilities.
  - PI 6.1: Provide persuasive arguments to defend personal opinions/ views.
  - PI 6.2: Discover problems in learning and life.

    ▪ PI **6.**3. Solve multi-task activities that requires the application of theoretical knowledge into practice.

▪ **PLO7:** Develop communication and teamwork skills.

    ▪ PI 7.1: Flexibly use verbal and non-verbal means in presentations and reports.

    ▪ PI 7.2: Show civilized communication and behavior in accordance with school regulations.

    ▪ PI 7.3: Organize group work in a scientific and effective way.

▪ **PLO8:** Have moral behavior to the teacher's qualities and ethics; participate in community service and form startup ideas.

    ▪ PI 8.1: Develop ethics and behavior of teachers.

    ▪ PI 8.2: Participate in projects and activities for the community.

    ▪ PI 8.3: Develop the entrepreneurial spirit in life.

III. Matrix of relations between program objectives and program learning outcomes

The relationship between the program objectives and the program learning outcomes in the table belows shows that students can achieve the program objectives if they meet the program learning outcomes

Table 2. *The relationship between the objectives and the output standards of the training program*

Program objectives (POs)	Program Learning Outcomes (PLOs)							
	1	2	3	4	5	6	7	8
General objectives: To train bachelors of Chemistry Pedagogy with professional capacity, professional and scientific research capacity to teach, work and manage at educational institutions, research institutions, enterprises in fields related to Chemistry; ability to start a business, adapt to a changing working environment and lifelong learning; have quality and ethics of teachers.								
Specific objectives:								
PO1. Have knowledge of political science, natural science, professional knowledge of chemistry, and educational science	x	x						

Program objectives (POs)	Program Learning Outcomes (PLOs)							
	1	2	3	4	5	6	7	8
for professional activities and life-long learning.								
PO2 Can organize teaching, education, and scientific research activities in the fields of Chemistry and Natural Sciences		x		x	x			
PO3 Have soft skills, creative thinking, inspiring ability, and adaptability to a change in working environment			x			x	x	
PO4. Have the qualities and ethics of a teacher, sense of community serving, and entrepreneurship spirit								x

Bảng 2. Matrix among POs, PLOs, and PIs.

PO	PLO	PI
PO 1: Have knowledge of political science, natural science, professional knowledge of chemistry, and educational science for professional activities and life-long learning.	**PLO 1:** Apply knowledge of political science, mathematics, natural science, and educational science to professional activities	PI 1.1: Use basic knowledge of political science in career and life. PI 1.2. Apply basic knowledge of mathematics and natural sciences in explaining career-related problems. PI 1.3: Apply the laws and theorems of chemistry to explain theoretical and experimental problems related to the field of chemistry and natural sciences.
PO2: Can organize teaching, education, and scientific research activities in the fields of Chemistry and Natural Sciences	**PLO 2:** Organize teaching and educational activities in direction of developing learners' quality and competency	PI 2.1: Analyse and develop the high school chemistry curriculum in the 2018 high school curriculum. PI 2.2. Develop plans to organize teaching and educational activities in chemistry in direction of developing learners' quality and competency.

PO	PLO	PI
		PI 2.3: Organize the teaching process using active teaching methods. PI 2.4: Flexibly use teaching facilities, testing, and assessing methods in the teaching process of chemistry.
	PLO4: Develop a positive educational environment.	PI 4.1: Organize class activities in high school. PI 4.2: Counsel school psychology for students. PI 4.3. Solve pedagogical behavior problems
PO3: Have soft skills, creative thinking, inspiring ability, and adaptability to a change in working environment	**PLO5:** Carry out scientific research in education, basic science in the fields of chemistry and natural science	PI 5.1: Proficiently perform basic experimental techniques in the field of chemistry and operate common equipment in chemical research. PI 5.2: Analyze specialized research data in a scientific and reasonable way. PI 5.3: Design research projects in the field of educational science, and

PO	PLO	PI
		basic science of Chemistry.
	PLO3: Apply information technology and foreign languages in the field of chemistry.	PI 3.1: Apply basic information technology skills as prescribed in Circular 03/2014/TT-BTTTT in teaching, scientific research, and professional activities. PI 3.2: Use other complementary softwares for analysis, data processing, virtual experiment design, online teaching, and professional activities. PI 3.3. Use foreign languages at the minimum of level 3 capacity according to the 6-level Foreign Language Competency Framework for Vietnam in teaching, scientific research and professional activities
	PLO 6: Demonstrate critical thinking, creativity and complex problem-solving abilities .	PI 6.1: Provide persuasive arguments to defend personal opinions/ views. PI 6.2: Discover problems in learning and life.

PO	PLO	PI
		PI 6.3. Solve multi-task activities that requires the application of theoretical knowledge into practice.
	PLO7: Develop communication and teamwork skills	PI 7.1: Flexibly use verbal and non-verbal means in presentations and reports. PI 7.2: Show civilized communication and behavior in accordance with school regulations. PI 7.3: Organize group work in a scientific and effective way
PO4: Have quality and ethics of teachers; sense of community service and entrepreneurial spirit.	**PLO8:** Have moral behavior, suitable to the teacher's qualities and ethics; participate in community service and form startup ideas.	PI 8.1: Develop ethics and behavior of teachers. PI 8.2: Participate in projects and activities for the community. PI 8.3: Develop the entrepreneurial spirit in life.

IV. Matrix comparing program learning outcomes with Viet Nam's national qualification framework

Table 3. Program Learning Outcomes according to the Viet Nam National Qualifications Framework at University Level

Knowledge	Skills	Level of autonomy and responsibility
Knowledge 1: Solid practical knowledge, deep, wide theoretical	Skill 1: Skills needed to be able to solve complex problems Skill 2: Skills to lead, start a business, create jobs for yourself and for others	AR 1: Work independently or work in a team in changing working

Knowledge	Skills	Level of autonomy and responsibility
knowledge within the scope of the training industry Knowledge 2: Basic knowledge of social sciences, political science, and law Knowledge 3: Knowledge of information technology meets job requirements Knowledge 4: Knowledge of planning, organization, and monitoring of processes in a particular field of activity Knowledge 5: Basic knowledge of management and administration of professional activities.	Skill 3: Skills in critically and using alternatives in unknown or changing environmental conditions. Skill 4: Skills to evaluate the quality of work after completion and the performance of team members Skill 5: Skills in communicating problems and solutions to others in the workplace; transmission and dissemination of knowledge, skills in performing specific or complex tasks. Skill 6: Have foreign language ability level 3/6 of Viet Nam's foreign language proficiency framework.	conditions, taking personal responsibility and responsibility for the team. AR 2: Guide and supervise others in performing defined tasks. AR 3: Self-guided, draw professional conclusions and be able to defend personal opinions. AR 4: Plan, coordinate, manage resources, evaluate and improve the effectiveness of activities.

Table 4. *Matrix comparing program learning outcomes with the Viet Nam National Qualifications Framework*

(Tick X in the relevant box)

Program learning outcomes according to the National Qualification Framework / Program Learning Outcomes	Knowledge					Skills						Level of autonomy and responsibility			
	Knowledge 1	Knowledge 2	Knowledge 3	Knowledge 4	Knowledge 5	Skill 1	Skill 2	Skill 3	Skill 4	Skill 5	Skill 6	AR 1	AR 2	AR 3	AR 4
PLO 1	x	x	x		x	x	x	x	x	x		x	x	x	x
PLO2	x		x	x	x	x	x	x	x			x	x	x	x
PLO3	x		x			x					x	x	x	x	x
POL4	x		x			x	x	x				x	x	x	x
PLO5	x			x	x	x			x	x		x	x	x	x
PLO6				x	x	x	x	x	x	x		x	x	x	x
PLO7				x	x	x	x	x	x	x		x	x	x	x
PLO8	x					x	x	x	x	x		x	x	x	x

V. Job opportunities and graduate study possibilities

1. Job opportunities

Graduates of the Bachelor of Chemistry Education program can do the following jobs:

- Working as a teacher of Chemistry and Natural Sciences at secondary schools, high schools, continuing education centers, professional high school, vocational colleges, universities;

- Working as a staff in departments and sectors such as: Department of Education, Department of Science, Technology and Environment, production facilities such as a cement production, metallurgy… and industries that need to use chemical knowledge;

- Working as a research officer at research centers and institutes related to Chemistry.

2. Ability to study to improve after graduation

Graduates can study at master's and doctoral levels at national or foreign institutions.

VI. Admission criteria and graduation conditions

1. Admission criteria

The Bachelor's degree program in Chemistry accepts applicants who meet the following conditions:

- Has been graduated from high school;

- High school students who have won national and international awards are eligible for direct admission (without entrance exam);

- Or the successful candidates are chosen based on their score in the national high school graduation exam ranking from high to low until the allowed number of candidates are met.

- Or based on their converted result from high school transcripts ranking from high to low.

2. Graduation requirements

Students are considered and recognized to graduate when they meet the following conditions:

- Accumulate enough courses, credits and complete other compulsory requirement of the training program, meet the program learning outcomes;

- The cumulative average of the whole program is at least average;

- At the time of graduation, they are not examined for criminal liability or are not subject to disciplinary action at the level of academic suspension.

VII. Teaching and learning strategies

To help students achieve the objectives and output standards of the Chemistry Education curriculum, the school has designed specific teaching strategies and methods as follows:

1. In-person teaching strategies

Face-to-face teaching is a teaching strategy in which information is conveyed to learners in a face-to-face manner, teachers present, and students listen. This teaching strategy is often applied in traditional classrooms and proves effective when it comes to communicating basic information to learners or explaining a new skill.

The teaching methods according to this strategy applied by the Chemistry Pedagogy training program include presentation, practice, demonstration.

2. Indirect teaching strategies

Learners are facilitated in the learning process without any public teaching activities carried out by the lecturer. This is a learner-oriented, learner-centered teaching process, where the lecturer does not directly communicate the content of the lesson to

the student but instead, the student is encouraged to take an active part in the learning process and use critical thinking skills to solve problems. Teaching methods under this strategy include: Problem-solving, case studies, reading comprehension, investigation, discussion…

3. Experiential learning

Experiential learning is a teaching strategy in which learners acquire knowledge and skills through what they experience through practice, practical observation and feeling. Teaching methods according to this strategy include fieldwork, conduction experiments, simulations, games, field observation, model building, surveying

4. Interactive teaching

Teaching methods under this strategy include Presentation, practice, demonstration, problem-solving, debate, group discussion, seminar, question and answer.

5. Independent learning

Teaching methods under this strategy include Self-study, project teaching, scientific research.

The aforementioned teaching and learning methods help students achieve the program learning outcomes, shown in the table below:

Table 5. *The relationship between teaching-learning methods and program learning outcomes*

(Tick X in the relevant box)

Teaching-learning strategies and methods		Program Learning Outcomes (PLOs)							
		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
1	In-person teaching strategies	x	x	x	x	x	x	x	x
2	Indirect teaching strategies	x	x	x	x	x	x	x	x
3	Experiential learning	x	x	x	x	x	x	x	x
4	Interactive learning	x	x	x	x	x	x	x	x
5	Independent learning	x	x	x	x	x	x		

D. CURRICULUM STRUCTURE AND CONTENT

I. Curriculum structure

The curriculum structure is divided into 4 blocks of knowledge, including compulsory modules and selective modules with the number of credits in each block given in table 6.

Bảng 6. Blocks of knowledge and number of credits

No.	Blocks of knowledge	Number of credits	Number of credits		
			Compulsory	Tự chọn	
				Compulsory	Selective
A	**General Education Knowledge block**	15	15	0	0
B	**Professional Education**	139	99	12	28
I	Major's Knowledge block	22	22	0	0
II	Specialized knowledge	61	41	0	20
III	Pedagogical professional knowledge	38	30	0	8
IV	Academic knowledge block, internship, and Graduation thesis	18	6	12	0
	Total	154	114	12	28

Note: The above program does not include compulsory modules in Physical Education, Military Education and Foreign Languages.

II. Training program content by blocks of knowledge

2.1. Program structure

Table 7. Program structure

No.	Course code	Course title	Number of credits				Pre-session/ prerequisite	Management Faculty	Note
			No. of Credits	Theory	Practise				
					L1	L2			
	GENERAL EDUCATION KNOWLEDGE BLOCK		**15.0**	**10.5**	**3.5**	**1.0**			
1	21231902	Marxist-Leninist philosophy	3	2	1	0		Political education	
2	21321901	Marxist-Leninist political economy	2	1.5	0.5	0	21231902	Political education	
3	21221903	Scientific socialism	2	1.5	0.5	0	21321901	Political education	
4	21221904	History of the Communist Party of Viet Nam	2	1.5	0.5	0	21221903	Political education	
5	21321922	Ho Chi Minh's Ideology	2	1.5	0.5	0	21221904	Political education	
6	31221885	Basic Informatics	2	1	0	1		Informatics	

7	31621549	General law	2	1.5	0.5	0		Political education	
8	00101265	Physical Education 1	(1)	(0)	(1)	(0)			
9	00101266	Physical Education 2	(1)	(0)	(1)	(0)			
10	00101267	Physical Education 3	(1)	(0)	(1)	(0)			
11	00101268	Physical Education 4	(1)	(0)	(1)	(0)			
12	00201264	Military Education	(4t)						
PROFESSIONAL EDUCATION			**139.0**	**57.0**	**17.0**	**19.0**			
BASIC KNOWLEDGE			**22.0**	**16.0**	**4.0**	**2.0**			
13	31141001	Basic Mathematics	4	3.5	0.5	0		Math	
14	31331977	General Physics	3	2.5	0.5	0		Physics	
15	31421006	Introductory about Chemistry science	2	1.5	0.5	0		Chemistry	
16	31441299	General chemistry	4	3	1	0		Chemistry	
17	31531678	General biology	3	2.5	0.5	0		Biology - Environment	
18	31421797	General chemistry laboratory manual	2	0	0	2	31441299	Chemistry	
19	31421085	Theoretical foundations of inorganic chemistry	2	1.5	0.5	0	31441299	Chemistry	
20	31421084	Fundamental of organic chemistry	2	1.5	0.5	0	31441299	Chemistry	
MAJOR'S KNOWLEDGE			**61.0**	**21.5**	**7.5**	**12.0**			
21	31421020	English in chemistry	2	1.5	0.5	0		Chemistry	A
22	31441318	Inorganic chemistry	4	3	1	0	31441299*	Chemistry	
23	31421804	Inorganic chemistry lab	2	0	0	2		Chemistry	
24	31421309	Crystal and coordination chemistry	2	1.5	0.5	0	31441318	Chemistry	

25	31441324	Hydrocarbons and hydrocarbon derivatives	4	3	1	0	31421084	Chemistry	
26	31421035	Polyfunctional and high molecular weight compounds	2	1.5	0.5	0	31441324	Chemistry	A
27	31421798	Organic chemistry lab	2	0	0	2	31441324	Chemistry	
28	31441315	Analitical chemistry	4	3	1	0	31441299 *	Chemistry	
29	31421801	Analitical chemistry lab	2	0	0	2		Chemistry	
30	31421021	Instrumental Chemical Analysis	2	1.5	0.5	0	31441315	Chemistry	
31	31421022	Instrumental Analysis chemistry laboratory	2	0	0	2		Chemistry	
32	31441511	Chemical Thermodynamics and Kinetics	4	3	1	0	31441299	Chemistry	
33	31421196	Electrochemistry	2	1.5	0.5	0	31441299 *	Chemistry	
34	31431312	Quantum chemistry	3	2	1	0	31441299 *	Chemistry	
35	31421799	Physical chemistry Lab	2	0	0	2	31441511 *	Chemistry	
36	31421003	Professional Practice	2	0	0	2		Chemistry	
		Selective modules	**20**	**15**	**5**	**0**			
37	31421053	*Structure and spectroscopy*	2	1.5	0.5	0		Chemistry	
38	31421910	*Synthesis of Inorganic Subsatnces*	2	1.5	0.5	0		Chemistry	
39	31421909	*Synthesis of Organic chemistry*	2	1.5	0.5	0		Chemistry	
40	31421303	*Chemistry of colloidal dispersion systems*	2	1.5	0.5	0		Chemistry	
41	31421023	*Environmental chemistry*	2	1.5	0.5	0		Chemistry	

42	31421308	*Analitical Chemistry in high school*	2	1.5	0.5	0	31441315	Chemistry	
43	31421313	*Physical chemistryl in high school*	2	1.5	0.5	0	31441511 *	Chemistry	
44	31421025	*Organic Chemistry in high school*	2	1.5	0.5	0	31441324 *	Chemistry	
45	31421027	*Inorganic Chemistry in high school*	2	1.5	0.5	0	31441318	Chemistry	
46	31421034	*Professional Innovation and Entrepreneurship*	2	1.5	0.5	0		Chemistry	
PEDAGOGICAL PROFESSIONAL KNOWLEDGE			**38**	**20**	**5.5**	**5**			
47	31431438	Teaching theory of chemistry	3	2.5	0.5	0		Chemistry	
48	31421028	Developing curriculum of chemistry subject in high school	2	1.5	0.5	0		Chemistry	
49	31431029	Assessment for teaching Chemistry	3	2	1	0		Chemistry	
50	31431030	Research Methods in Chemistry Science	3	2	1	0		Chemistry	
51	31431570	Methodology of teaching chemistry	3	2.5	0.5	0	31431438	Chemistry	
52	31431031	Chemistry teaching practice	3	0	0	3		Chemistry	
53	31421824	Laboratory of chemistry experiment in high school	2	0	0	2		Chemistry	
54	32041719	Educational Psychology	4	3.5	0.5	0		Educational Psychology	
55	32031255	Pedagogy	3	2.5	0.5	0		Educational Psychology	

56	32021273	Pedagogical Communication	2	1.5	0.5	0		Educational Psychology	
57	31421009	Experiential learning activities in teaching chemistry	2	1.5	0.5	0		Chemistry	
		Elective course	**8.0**	**6.0**	**2.0**	**0.0**			
58	31421930	*Application of information technology in chemistry teaching*	2	1	1	0	31221885 *	Chemistry	
59	31421032	*Teaching Chemistry Topics in English*	2	1.5	0.5	0		Chemistry	A
60	31421033	*Teaching and capacity development in chemistry in high school*	2	1.5	0.5	0		Chemistry	
61	32021002	*State Management of Education*	2	2	0	0		Educational Psychology	
INTERNSHIPS AND GRADUATION THESIS			**18**	**0**	**0**	**6**			
62	31421055	Pedagogical practice	2	0	0	2		Chemistry	
63	31441056	Pedagogical internships	4	0	0	4		Chemistry	
		Compusory selective course (6/12 credits must be selected)	**12**	**0**	**0**	**12**			
64	31461057	*Graduation thesis course*	6	0	0	6		Chemistry	
65	31431036	*Graduate topic 1: Application of educational and basic scientific research methods and techniques in the field of chemistry*	3	0	0	3		Chemistry	Type 1
66	31431037	*Graduate topic 2: Design and Implementation of*	3	0	0	3		Chemistry	Type 1

		Educational and Basic Scientific Research in the field of Chemistry							
TOTAL FULL COURSE CREDITS			**154**						
Total compulsory credits			**114**						
Minimum total selective credits			**16**						

Note: A minimum of 130 credits muste be earned, including all compulsory modules (Physical education, military education modules are excluded from the total cumulative credits for the entire course).

-The prerequisite module is the module marked with *. A: Modules are taught in English

2.2. Teaching scheme

Table 8: Teaching scheme

SEMESTER	Module code	COURSE NAME	Number of credits				Pre-session/ prerequisite modules	Teaching Faculty	Note
			Credits	Theory	Practise				
					1	2			
1	31141001	Basic Mathematics	4	3.5	0.5	0		Math	
	31531678	General biology	3	2.5	0.5	0		Biology - Environment	
	31221885	Basic Informatics	2	1	0	1		Informatics	
	31331977	General Physics	3	2.5	0.5	0		Physics	
	31421006	Introductory about Chemistry science	2	1.5	0.5	0		Chemistry	
	31441299	General chemistry	4	3	1	0		Chemistry	
	00101265	*Physical Education 1*	(1)	(0)	(1)	(0)			
		Total credits for the semester:	**18**	**14.0**	**3.0**	**1**			
2	21231902	Marxist-Leninist philosophy	3	2	1	0		Political education	
	31421085	Theoretical foundations of inorganic chemistry Foundations	2	1.5	0.5	0	31441299	Chemistry	
	31421084	Fundamental of organic chemistry	2	1.5	0.5	0	31441299	Chemistry	
	32041719	Educational Psychology	4	3.5	0.5	0		Educational Psychology	

	31621549	General law	2	1.5	0.5	*0*		Political education
	31421797	General chemistry laboratory manual	2	0	0	2	31441299	Chemistry
	31441511	Chemical Thermodynamics and Kinetics	4	3	1	0	31441299	Chemistry
	00101266	Physical Education 2	(1)	(0)	(1)	(0)		
	00201264	Military Education	(4t)					Military Education
		Selective modules						
		Total credits for the semester:	**19**	**13.0**	**4.0**	**2.0**		
3	21321901	Marxist-Leninist political economy	2	1.5	0.5	0	21231902	Political education
	32031255	Pedagogy	3	2.5	0.5	0		Educational Psychology
	31441318	Inorganic chemistry	4	3	1	0	31441299*	Chemistry
	31421804	Inorganic chemistry lab	2	0	0	2		Chemistry
	31421020	English in chemistry	2	1.5	0.5	0		Chemistry
	31441324	Hydrocarbons and hydrocarbon derivatives	4	3	1	0	31421084	Chemistry
	00101267	Physical Education 3	(1)	(0)	(1)	(0)		
		Selective modules						
	31421909	*Synthesis of Organic chemistry*	2	1.5	0.5	0		Chemistry
	31421910	*Synthesis of Inorganic Subsatnces*	2	1.5	0.5	0		Chemistry
		Total credits for the semester:	**21**	**14.5**	**4.5**	**2.0**		
4	21221903	Scientific socialism	2	1.5	0.5	0	21321901	Political education
	31421309	Crystal and coordination chemistry	2	1.5	0.5	0	31441318	Chemistry
	31421035	Polyfunctional and high	2	1.5	0.5	0	31441324	Chemistry

		molecular weight compounds							
	31421798	Organic chemistry lab	2	0	0	2	31441324	Chemistry	
	31421799	Physical chemistry Lab	2	0	0	2	31441511*	Chemistry	
	31431438	Teaching Theory of Chemistry	3	2.5	0.5	0		Chemistry	
	31421196	Electrochemistry	2	1.5	0.5	0	31441299*	Chemistry	
	00101268	Physical Education 4	(1)	(0)	(1)	(0)			
		Selective modules							
	31421023	*Environmental Chemistry*	2	1.5	0.5	0		Chemistry	
	31421027	*Inorganic Chemistry in high school*	2	1.5	0.5	0	31441318	Chemistry	
	31421303	*Chemistry of colloidal dispersion systems*	2	1.5	0.5	0		Chemistry	
		Total credits for the semester:	**21**	**13.0**	**4.0**	**4.0**			
5	21221904	History of the Communist Party of Viet Nam	2	1.5	0.5	0	21221903	Political education	
	31441315	Analitical chemistry	4	3	1	0	31441299*	Chemistry	
	31421801	Analitical chemistry lab	2	0	0	2		Chemistry	
	31431570	Methodology of teaching chemistry	3	2.5	0.5	0	31431438	Chemistry	
	32021273	Pedagogical Communication	2	1.5	0.5	0		Chemistry	
	31431030	Research Methods in Chemistry Science	3	2	1	0		Chemistry	
		Selective modules							
	31421930	*Application of information technology in chemistry teaching*	2	1	1	0	31221885*	Chemistry	
	31421053	*Structure and spectroscopy*	2	1.5	0.5	0		Chemistry	

		Total credits for the semester:	20	13.0	5.0	2.0			
6	21321922	Ho Chi Minh's Ideology	2	1.5	1	0	21221904	Political education	
	31431312	Quantum chemistry	3	2	1	0	31441299*	Chemistry	
	31421021	Instrumental Chemical Analysis	2	1.5	0.5	0	31441315	Chemistry	
	31421022	Instrumental Chemical Analysis Lab	2	0	0	2		Chemistry	
	31421028	Developing curriculum of chemistry subject in high school	2	1.5	0.5	0		Chemistry	
	31421824	Laboratory of chemistry experiment in high school	2	0	0	2		Chemistry	
	31421003	Professional Practice	2	0	0	2		Chemistry	
		Selective modules							
	31421034	*Innovation and Entrepreneurship*	2	1.5	0.5	0		Chemistry	
	31421313	*Physical chemistry in high school*	2	1.5	0.5	0	31441511*	Chemistry	
	31421308	*Analitical Chemistry in high school*	2	1.5	0.5	0	31441315	Chemistry	
		Total credits for the semester:	21	11.0	4.0	6.0			
7	31421009	Experiential learning activities in teaching chemistry	2	1.5	0.5	0		Chemistry	
	31431029	Assessment for teaching Chemistry	3	2	1	0		Chemistry	
	31431031	Chemistry teaching practice	3	0	0	3		Chemistry	
	31421055	Pedagogical practice	2	0	0	2		Chemistry	
		Selective modules							
	31421033	*Teaching and capacity development in*	2	1.5	0.5	0		Chemistry	

Semester	Code	Course name					Prerequisite	Department	Type
		chemistry in high school							
	31421025	*Organic Chemistry in high school*	2	1.5	0.5	0	31441324*	Chemistry	
	31421032	*Teaching Chemistry Topics in English*	2	1.5	0.5	0		Chemistry	
	32021002	*State Management of Education*	2	2	0	0		Educational Psychology	
		Total credits for the semester:	**18.0**	**10.0**	**3.0**	**5.0**			
8	31441056	Pedagogical internships	4	0	0	4		Chemistry	
		Selective modules (Compulsory)	12	2	0	10			
	31461057	*Graduation thesis course*	6	0	0	6		Chemistry	
	31431036	*Graduate topic 1: Application of educational and basic scientific research methods and techniques in the field of chemistry*	3	0	0	3		Chemistry	**Type 1**
	31431037	*Graduate tocpic 2: Design and Implementation of Educational and Basic Scientific Research in the field of Chemistry*	3	0	0	3		Chemistry	**Type 1**
		Total credits for the semester:	**10**	**0**	**0**	**10**			

III. Training program tree diagram (list of modules systematized by blocks of knowledge and sequence)
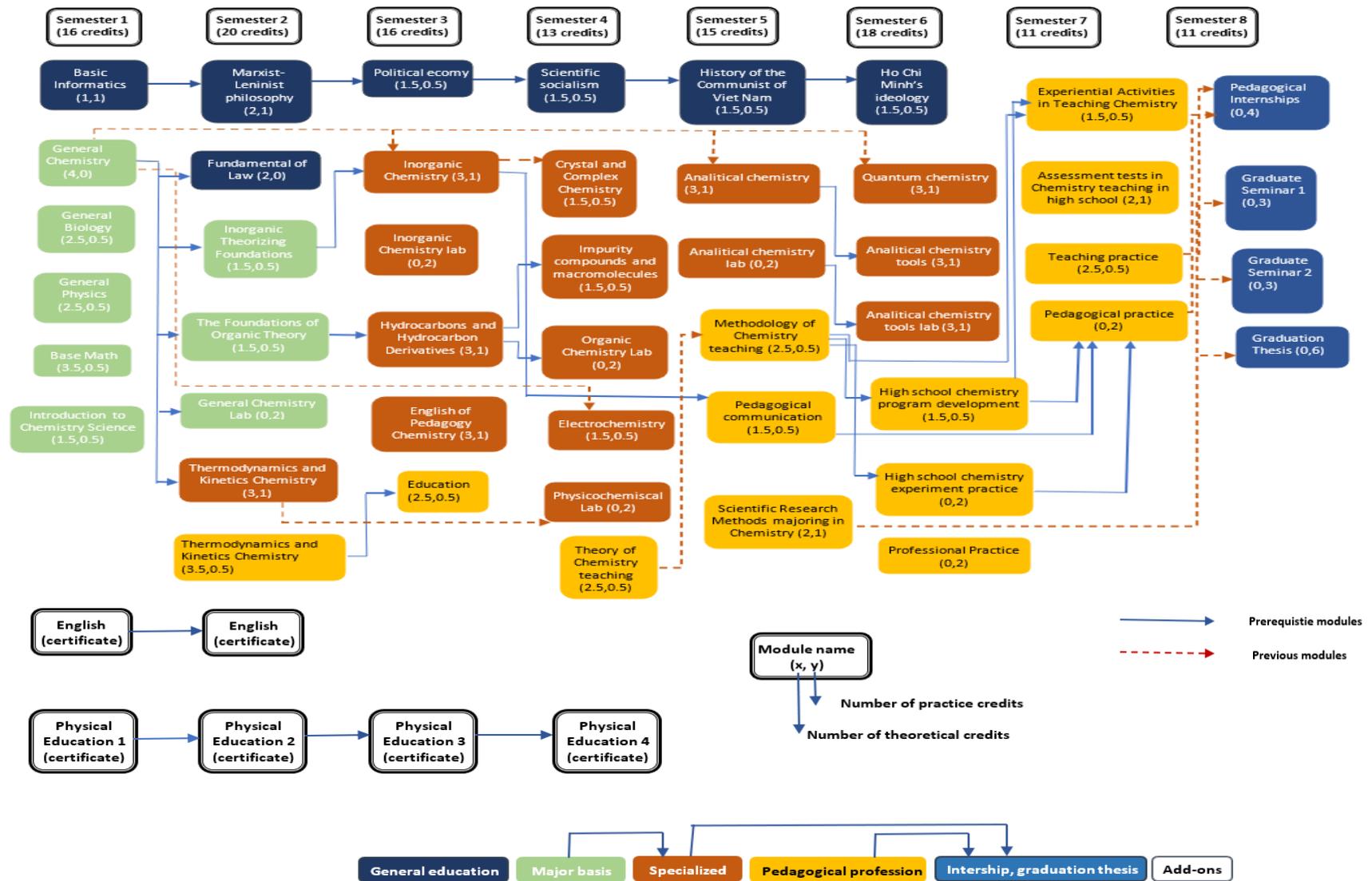
130 credits training program tree in chemical education

IV. The matrix shows the contribution of modules to the standardization of the program learning outcomes (PLOs)

STT	Học kỳ	Tên học phần (Liệt kê tất cả các học phần theo thứ tự từ năm 1 đến năm cuối)	PI1.1	PI1.2	PI1.3	PI2.1	PI2.2	PI2.3	PI2.4	PI3.1	PI3.2	PI3.3	PI4.1	PI4.2	PI4.3	PI5.1	PI5.2	PI5.3	PI6.1	PI6.2	PI6.3	PI7.1	PI7.2	PI7.3	PI8.1	PI8.2	PI8.3
										PLO3			**PLO4**			**PLO5**			**PLO6**			**PLO7**			**PLO8**		
1	1	Basic Mathematics		R,A																							
2		General biology		R															R,A			I			R		
3		Basic Informatics								R,A	I						I										
4		General Physics		M,A																		R					
5		Introductory about Chemistry science		I	R					I														R	R		
7		General chemistry		I		I			I				I		I				R			I	R,A		R		
8		Physical Education 1																									
9		Marxist-Leninist philosophy	R																								
10		Theoretical foundations of inorganic chemistry Foundations		I	R,A	I					I								I						R		
11	2	Fundamental of organic chemistry		I	R,A	I					I								I	I					R		
12		Educational Psychology					R							M,A								R		R	R,A		
18		General law	R,A										R	I													
6		General chemistry laboratory manual			I						R					R	R		I			R			R		
14		Chemical Thermodynamics and Kinetics			R,A					R	R								R	R	R				R		
15		Physical Education 2																									

STT	Học kỳ	Tên học phần (Liệt kê tất cả các học phần theo thứ tự từ năm 1 đến năm cuối)	Chuẩn đầu ra CTĐT (PLOs)																							
			PLO1			PLO2				PLO3			PLO4			PLO5			PLO6			PLO7			PLO8		
			PI1.1	PI1.2	PI1.3	PI2.1	PI2.2	PI2.3	PI2.4	PI3.1	PI3.2	PI3.3	PI4.1	PI4.2	PI4.3	PI5.1	PI5.2	PI5.3	PI6.1	PI6.2	PI6.3	PI7.1	PI7.2	PI7.3	PI8.1	PI8.2	PI8.3
16		Military Education																									
17		Marxist-Leninist political economy	R																								
13		Pedagogy											R,A	R	R										R		
19		Inorganic chemistry		R,A	R												R		R		R				R		
20		Inorganic chemistry lab		R												M	R								R		
21		English in chemistry			R							R,A										R		R			
22	3	Hydrocarbons and hydrocarbon derivatives		R	M							R,A							R			R		R	R		
23		Physical Education 3																									
24		*Synthesis of Organic chemistry*			.M,A					.R	.R									.R	.R	.R		.R			
25		*Synthesis of Inorganic Subsatnces*			.M,A					.R		.R							.R							.R	
26		Scientific socialism	R,A																								
27		Crystal and coordination chemistry			M														R,A		R	R					
28	4	Polyfunctional and high molecular weight compounds		R	R						M,A	R							R	R		R					
29		Organic chemistry lab									R					M	R					R	R	R			I
39		Physical chemistry Lab			M											R,A	R			R					R		
30		Teaching Theory of Chemistry				R	M,A	R	M													I		R	R		
31		Electrochemistry			M,A					R	R							R	R	R				R			

STT	Học kỳ	Tên học phần (Liệt kê tất cả các học phần theo thứ tự từ năm 1 đến năm cuối)	PI1.1	PI1.2	PI1.3	PI2.1	PI2.2	PI2.3	PI2.4	PI3.1	PI3.2	PI3.3	PI4.1	PI4.2	PI4.3	PI5.1	PI5.2	PI5.3	PI6.1	PI6.2	PI6.3	PI7.1	PI7.2	PI7.3	PI8.1	PI8.2	PI8.3
		Chuẩn đầu ra CTĐT (PLOs) — PLO1			PLO2				PLO3			PLO4			PLO5			PLO6			PLO7			PLO8			
32		Physical Education 4																									
33		Environmental Chemistry		R			.R				.R											.R		.R			
43		Inorganic Chemistry in high school			.R	.R					.R										.R			.R			
35		Chemistry of colloidal dispersion systems			.M					.R	.R										.M,A	.R		.R	.R		
36	5	History of the Communist Party of Viet Nam	R																						R		
37		Analitical chemistry			R												R,A			I					R		
38		Analitical chemistry lab								R						R	R,A	R							R		
47		Methodology of teaching chemistry					R	M,A	R					R	M,A							R	R		R		
40		Pedagogical Communication													M,A					R		R,A	R		R		
41		Research Methods in Chemistry Science								R							R	M,A	R	R	R	R,A				I	I
42		Application of information technology in chemistry teaching								.M,A	.M												.R		.R	.R	
44		Structure and spectroscopy		.R	.R							.R							.R			.R			.R	.R,A	
45	6	Ho Chi Minh's Ideology	R																						R		
46		Quantum chemistry		R	M,A						R									R					R		

STT	Học kỳ	Tên học phần (Liệt kê tất cả các học phần theo thứ tự từ năm 1 đến năm cuối)	Chuẩn đầu ra CTĐT (PLOs)																							
			PLO1			PLO2				PLO3			PLO4			PLO5			PLO6			PLO7			PLO8		
			PI1.1	PI1.2	PI1.3	PI2.1	PI2.2	PI2.3	PI2.4	PI3.1	PI3.2	PI3.3	PI4.1	PI4.2	PI4.3	PI5.1	PI5.2	PI5.3	PI6.1	PI6.2	PI6.3	PI7.1	PI7.2	PI7.3	PI8.1	PI8.2	PI8.3
48		Instrumental Chemical Analysis			R						M,A					R						R					
49		Instrumental Chemical Analysis Lab			R					R	M					M,A	R					R		R,A			
50		Developing curriculum of chemistry subject in high school				M,A	R														I	R		R	R		
51		Laboratory of chemistry experiment in high school					R,A				M,A				R	R	R,A										
52		Professional Practice		R	R															M,A					R	R,A	R
		Innovation and Entrepreneurship																	.R,A	.R							.R,A
54		*Physical chemistry in high school*				.M,A				.R									.R			.R		.R			
		Analitical Chemistry in high school		.M		.R					.R															.R	
60		Experiential learning activities in teaching chemistry				R	R	R					R		R				*R*							I	R,A
56	7	Assessment for teaching Chemistry				R	R		M,A						R							R,A		R	R		
57		Chemistry teaching practice				R	M	M,A	M				R		M,A							R	M	R	R	R	
58		Pedagogical practice			M	R	R	R	R,A			R	R	R					R		R,A	R	M,A	R,A	R,A	R	R
59		*Teaching and capacity development in*			M	.M		R														R				.R	

STT	Học kỳ	Tên học phần (Liệt kê tất cả các học phần theo thứ tự từ năm 1 đến năm cuối)	Chuẩn đầu ra CTĐT (PLOs)																								
			PLO1			PLO2				PLO3			PLO4			PLO5			PLO6			PLO7			PLO8		
			PI1.1	PI1.2	PI1.3	PI2.1	PI2.2	PI2.3	PI2.4	PI3.1	PI3.2	PI3.3	PI4.1	PI4.2	PI4.3	PI5.1	PI5.2	PI5.3	PI6.1	PI6.2	PI6.3	PI7.1	PI7.2	PI7.3	PI8.1	PI8.2	PI8.3
		chemistry in high school																									
55		*Organic Chemistry in high school*	.R,A										.R														
61		*Teaching Chemistry Topics in English*					.M	.M	.R	.R	.R				.R							.R					
62		*State Management of Education*					.R	R				.R										R			.R		
63		Pedagogical internships				M,A	M			M,A		M	M,A	M,A					M	M,A	M,A	M	M,A	M	M,A	M	M
64		*Graduation thesis course*		.M	.M				.M		.M		.M		.M			.M,A	.M		.M	.M		.M		.M	.M
64	8	*Graduate Topic 1: Application of educational and basic scientific research methods and techniques in the field of chemistry*		.R					.R		.R		.R		.R			.R	.R		.R	.R		.R		.R	.R
66		*Graduate Topic 2: Design and Implementation of Educational and Basic Scientific Research in the field of Chemistry*		.M					.M		.M		.M		.M			.M	.M		.M	.M		.M		.M	.M
Tổng hợp số lượng học phần BB theo các mức độ đóng góp																											

E. TRAINING PROCESS AND ASSESSMENT METHODS AND TOOLS

I. Training process

The training program is structured according to the credit system, the training process complies with the regulations of the Ministry of Education and Training, the University of Education and Science – University of Da Nang with the training period of 4 years. Each academic year consists of two main semesters (from mid-August to the end of June) and summer semesters (from early July to mid-August). According to the designed route, students can enroll in courses in the basic knowledge and industry base from semester 1 to semester 3, and specialized knowledge in the next 5 semesters.

Students must complete all compulsory courses as well as the number of elective modules required by the curriculum, the minimum cumulative total of credits is 130 credits with a graduation GPA above 2.0.

II. Assessment methods and tools

1. Assessment of learning outcomes

Assessment of learning outcomes is the process of collecting, synthesizing, interpreting information or data related to learner learning and experience aims to capture what learners know, understand and can do, as a result of the learner's educational experience to make decisions related to the learner.

2. Module assessment

- Modules are evaluated through a variety of assessment times, including process assessment, midterm assessment, and final assessment. Modules that can use one or more types of assessment include: Summative assessment and process assessment; Preliminary assessment and diagnostic evaluation; Benchmark-based assessment and criteria-based assessment; Objective assessment and subjective assessment; Classroom Assessment and School-Based Assessment; Individual assessments and group assessments; Self-assessment and peer review; Authentic Reviews and Creative Reviews.

- The assessment of modules must ensure the principle of assessing the different competencies of learners, ensuring accuracy, objectivity, fairness, comprehensive, public, ensuring education and development.

3. Module assessment methodology

Modules are assessed using one or more of the following methods:

- Attendance assessment: Assessing learners' sense of learning and independence and creativity (attendance of learners' presence, awareness, attitude in preparing lessons, participating in discussions, building learners' lessons in class).

- Assignment Assessment: Assess student completion of assignments assigned by the instructor related to lessons during and after class. These exercises can be performed individually or in groups and scored on the basis of previously announced criteria.

- Group of written test methods: The written test method includes an essay test and a different written test

As for the method of testing essay writing, students are required to answer certain questions, assignments or personal opinions on questions related to the standard requirements of the module or course. This test method is divided into two categories: Long Essay and Short Essay.

For the objective multiple choice test method, students answer the types of questions or assignments for which answer options are already available or if the student writes the answer, the answer must be short and have only one correct spelling.

- Experimental/practical evaluation: Students are evaluated based on criteria for the level of discussion and sharing; the degree of correct implementation of operations and processes; results of practice/experiments; Practice/experiment reports.

- Presentations: Students are required to work individually or in groups and present the results to other students. This activity, in addition to assessing the level of student achievement in specialized knowledge, also assesses the level of development of skills such as communication, negotiation, teamwork. Modules are developed assessment standards or rubrics corresponding to module output standards.

- Q&A assessment:

Students are assessed through interviews, questions and direct answers. This method is used in some courses to assess students' overall competencies including knowledge and skills in communication and presentation. Modules use rubrics for assessment to ensure accuracy and fairness for learners.

- Teamwork assessment:

Group work assessments are used when conducting group teaching activities and are used to assess students' teamwork skills. Rubric evaluation for the product, presentation ability of the team and rubric self-assessment teamwork for subjects in the self-assessment or peer review groups. The evaluation rubrics are published in the training program book.

- Essay/Large Assignment Review:

An essay is writing a report on a problem of a subject or a practical problem of a particular unit in order to draw conclusions, comments, proposed solutions to be able to implement or improve the raised problem. Essay evaluation includes an assessment of Structure, Content, Conclusion, and Presentation Form.

- Product Reviews:

The method of evaluating learning results through learners' products has been implemented, expressed through construction and creativity, expressed in the effective completion of the work. The criteria and criteria for evaluating products are very diverse. Product reviews are based on the specific context of reality.

-Pedagogical Practice Review

Evaluation of the results of pedagogical practice on the basis of the criteria of Educational Fact-Finding; Pedagogical Practice and Heaf Pedagogical Practce. The contents of the assessment are determined specific criteria according to the evaluation rubrics.

- Pedagogical Internship Review:

Evaluate the results of pedagogical internships based on the criteria of teaching internships, headship internships and Results of teaching hours of teachers and professional groups. The contents of the assessment are determined specific criteria according to the evaluation rubrics.

- Assessment of Internships at agencies/ organizations / enterprises:

The results of internships at agencies/organizations/enterprises are evaluated based on the criteria of compliance with the unit's rules; Working attitude; Knowledge and skills of acquiring and evaluating internship reports at enterprises. The contents of the assessment are determined specific criteria according to the evaluation rubrics.

- Graduation Thesis/Dissertation Review:

Evaluation of the Thesis / Graduation Thesis based on the criteria of the Form of report; Quality of reporting; Protective qualities. The contents of the assessment are determined specific criteria according to the evaluation rubrics. Evaluation of the Thesis Course / Graduation Thesis is carried out by the Grading Board of the Thesis / Graduation Thesis signed by the Principal. The number of members of the council is 3 or 5 or 7 people, including the President and the Secretary.

Testing and evaluation methods are tools for assessing the level of achievement of CLO in particular as well as plo in general. To ensure that the assessment is conducted objectively, accurately and in a satisfactory manner, the PLO is met, various test and evaluation methods have been designed in the form of rubrics. The rubrics include descriptions of competency content and corresponding assessment levels based on the updated Bloom/Bloom rating scale. The Rubric evaluation applicable to modules in the undergraduate program is presented in Appendix 1 of the program.

4. How to calculate module scores

- Module assessment scores include in-course assessment, mid-term assessment, and final assessment. Inside:

For theoretical modules or with both theory and practice, syllabus internship modules, practical: Module scores include score component 1 (Short class assignments, attendance, essays, practice...) with a weight of 0,1; score component 2 (Essay score, practice ...) with a weight of 0,1; Midterm test score (required) with a weight of 0,3 and the final test score (required) with a weight of 0,5. Depending on the module, the weights of score component 1 and 2 may change accordingly.

For experimental and practical modules: The component score is the evaluation score of each practice and the module score is the average of the practice score.

For Pedagogical Practice : Pedagogical Practice score is calculated as follows:

$$\text{Pedagogical practice points} = \frac{(\text{educational fact-finding points}) + 3(\text{teaching knowledge points}) + 2 (\text{head teacher's point})}{6} + (\text{bonus/penalty points})$$

For Pedagogical Internship: Pedagogical Internship Score is calculated as follows:

Pedagogical Internship points = (teaching internship points) x 0,6 + (headmaster internship score) x 0,5 $\pm$ (bonus/penalty points)

For Thesis/ Dissertation: Review scores are the combined average of the scores of board members, reviewers, and supervisors (collectively referred to as component points). Component scores are on a 10-point scale with a minimum gap of 0,25. The final assessment score takes one decimal number and is converted to a letter scale.

- Module scores are assessed on a 10-point scale.

F. TRAINING PROGRAM IMPLEMENTATION GUIDE

The program complies with the current regulations of the Ministry of Education and Training. University of Danang and the University of Education in the form of credits. This program is periodically reviewed and revised annually to meet the development of the industry and suit the needs of society.

G. EVALUATE AND UPDATE AND IMPROVE THE TRAINING PROGRAM

I. Update the training program

At least once every 5 years, the head of the professional unit managing the training program must organize an assessment and improve the training program in accordance with the current Regulations of the Pedagogical University and according to Circular 04/2016 of the Ministry of Education and Training issued on 14/03/2016.

The Principal decides to promulgate an updated and supplemented training program on the basis of the proposal of the Science and Training Council after the training program is adjusted and updated.

II. Evaluation of the training program

At least once every 4 years, the head of the professional unit managing the training program must organize an assessment and improve the training program in accordance with the current Regulations of the Pedagogical University and according to Circular 04/2016 of the Ministry of Education and Training issued on 14/03/2016.

The Principal decides to promulgate an improved and revised training program on the basis of the proposal of the Science and Training Council after the training program is evaluated./.

DEAN   **RECTOR**

Tran Duc Manh, PhD   **Assoc Prof. Luu Trang**