

MINISTRY OF EDUCATION AND TRAINING  
QUY NHON UNIVERSITY

**UNDERGRADUATE PROGRAM**

Level of Education: **Undergraduate**  
Major: **Natural Science Teacher Education**  
Major Code: **7140247**  
Mode of Education: **Full-time**

## **UNDERGRADUATE PROGRAM**

*(Issued in conjunction with Decision No.: 2178/QĐ-ĐHQN dated August 01, 2025  
 by the Rector of Quy Nhon University)*

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|---------------------|--|
| Level of Education: | <b>Undergraduate</b>                     |
| Major:              | <b>Natural Science Teacher Education</b> |
| Major Code:         | <b>7140247</b>                           |
| Mode of Education:  | <b>Full-time</b>                         |

### **1. PROGRAM OBJECTIVES (POs)**

#### **1.1. General Objectives**

To train graduates in Natural Science Teacher Education with strong political qualities, ethics, and good health; possessing solid knowledge of fundamental sciences and educational sciences; equipped with skills to apply professional knowledge in solving problems in education, teaching Natural Science, and conducting scientific research. Graduates are expected to have lifelong learning capacity, adaptability to changing educational environments, digital competence in teaching, research, and professional development, meeting the requirements of digital transformation in education. They should demonstrate professional responsibility and community service awareness, fulfilling teacher professional standards and contributing to socio-economic development, national defense, security, and international integration.

#### **1.2. Specific objectives**

- PO1: Possess professional knowledge, skills, and practical competencies as Natural Science teachers.
- PO2: Demonstrate critical thinking, proactive collaboration, and problem-solving in educational contexts at school, local, national, and regional levels.
- PO3: Exhibit teaching competence, creativity, digital literacy, and lifelong self-learning and research capacity.
- PO4: Uphold ethics, professional responsibility, and community service awareness.

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

- Employment Opportunities:
  - + Teacher of Natural Science at secondary schools and international schools.
  - + Teaching assistant or lecturer at universities and colleges.

+ Education specialist at Departments of Education and Training, curriculum development centers.

+ Research staff at educational research institutes.

+ Editor or author of textbooks and reference books for publishers.

+ Instructor and curriculum developer in Natural Science and STEM education at training centers and educational organizations.

- Further Study: Continue postgraduate studies (Master's, Doctorate) domestically or abroad.

### 3. LEARNING OUTCOMES

The program is designed to ensure that upon graduation, students attain the following learning outcomes:

|   |  |
|---|--|
| <b>PLO1:</b> Apply general education, foundational, and disciplinary knowledge in professional work             | <b>PI 1.1.</b> Identify general education knowledge, foundational disciplinary knowledge, and sectoral knowledge to perform professional tasks |
|   | <b>PI 1.2.</b> Apply general education knowledge, foundational disciplinary knowledge, and sectoral knowledge to perform professional tasks    |
| <b>PLO 2:</b> Apply basic Natural Science knowledge to solve professional problems                              | <b>PI 2.1.</b> Identify basic knowledge of Natural Science   |
|   | <b>PI 2.2.</b> Apply basic knowledge of Natural Science to solve professional problems   |
| <b>PLO 3:</b> Analyze advanced Natural Science knowledge to approach new knowledge and solve practical problems | <b>PI 3.1.</b> Analyze advanced Natural Science knowledge to access new knowledge  |
|   | <b>PI 3.2.</b> Analyze advanced Natural Science knowledge to solve practical problems  |
| <b>PLO 4:</b> Conduct and propose improvements in Natural Science experiments                                   | <b>PI 4.1.</b> Conduct Natural Science experiments to illustrate knowledge in the general education curriculum                                 |
|   | <b>PI 4.2.</b> Propose practical scientific solutions related to improving laboratory and experimental procedures                              |
| <b>PLO 5:</b> Organize and apply pedagogical communication skills in teaching and educational                   | <b>PI 5.1.</b> Organize teaching and educational activities oriented toward developing students' qualities and competencies                    |

|   |   |
|---|---|
| activities oriented toward student competence and character development   | <b>PI 5.2.</b> Apply pedagogical communication skills in teaching and educational activities oriented toward developing students' qualities and competencies  |
|   | <b>PI 5.3.</b> Evaluate teaching and educational activities oriented toward developing students' qualities and competencies   |
| <b>PLO 6:</b> Conduct scientific research in professional practice  | <b>PI 6.1.</b> Develop scientific research plans in professional practice   |
|   | <b>PI 6.2.</b> Implement scientific research in professional practice   |
| <b>PLO 7:</b> Use foreign languages, digital tools, and technologies in professional activities   | <b>PI 7.1.</b> Use foreign languages in professional and specialized activities   |
|   | <b>PI 7.2.</b> Use digital tools and technologies in professional and specialized activities  |
| <b>PLO8:</b> Demonstrate autonomy, self-learning, self-research, personal responsibility, and effective collaboration in academic and professional environments | <b>PI 8.1.</b> Demonstrate autonomy, self-learning, self-research, and personal responsibility to proactively access knowledge, develop independent thinking, and build effective learning methods      |
|   | <b>PI 8.2.</b> Demonstrate collaboration to enhance learning quality, promote holistic student development, and build an educational environment reflecting the school's cultural identity              |
| <b>PLO9:</b> Exhibit ethics, professional responsibility, and community service to contribute to holistic human development                                     | <b>PI 9.1.</b> Identify ethical issues, professional responsibilities of teachers, and community service awareness  |
|   | <b>PI 9.2.</b> Demonstrate ethics, professional responsibility, and community service to shape students' character, build a positive learning environment, and contribute to holistic human development |

#### 4. PROGRAM DURATION AND TOTAL CREDITS

**4.1. Program Duration:** 04 years

**4.2. Total credits:** 138 credits (excluding 03 credits of Physical Education and 09 credits of National Defense and Security Education)

| <b>Program structure</b>                 | <b>Credits</b> |
|--|----------------|
| <b>General Knowledge</b>                 | <b>24</b>      |
| <b>Professional Knowledge</b>            | <b>114</b>     |
| - Fundamental knowledge                  | 24             |
| - Disciplinary Knowledge                 | 53             |
| - Supplementary Knowledge                | 31             |
| - Graduation thesis, Alternative courses | 6              |
| <b>Total</b>                             | <b>138</b>     |

#### 5. ADMISSION REQUIREMENTS

Applicants who wish to apply for admission to the Natural Science Teacher Education program must meet the following requirements:

- Have graduated from upper secondary school (high school) or an equivalent qualification.

- Satisfy the requirements specified in Article 6 (Eligibility for applicants) of the Regulations on Admissions to full-time undergraduate programs and full-time college programs in teacher education issued by the Ministry of Education and Training under Circular No. 05/2017/TT-BGDĐT dated January 25, 2017 of the Minister of Education and Training.

#### 6. MODE OF STUDY AND GRADUATION REQUIREMENTS

**6.1. Mode of study:** Credit-based system

**6.2. Graduation Requirements:** To be eligible for graduation, students must satisfy the following requirements:

- *Academic Requirements:* Students must complete all required courses and accumulate the total number of credits prescribed in the curriculum. In addition, they must obtain a minimum cumulative grade point average (CGPA) of 2.00 on a 4.0 scale.

- *Physical Education and National Defense and Security Education:* Students must complete all required Physical Education courses and obtain the National Defense and Security Education Certificate in accordance with current regulations.

- *Foreign Language Requirement:* Students must meet the foreign language proficiency requirement in accordance with the current regulations of the training

institution.

- *Information Technology Requirement:* Students must meet the basic information technology competency standards as stipulated in Circular No. 07/2015/TT-BGDĐT, as well as other specific regulations of the training institution.

- *Conduct and Ethical Requirements:* At the time of graduation consideration, students must not be subject to criminal prosecution and must not be under disciplinary action at the level of suspension from study.

## 7. TEACHING METHODS AND LEARNING ASSESSMENT

### 7.1. Teaching methods

| No | Teaching Strategies  | Teaching methods   |
|----|--|--|
| 1  | <p><b>Direct Instruction:</b> Direct instruction is a teaching process in which the instructor directly delivers information and fundamental knowledge to learners. In this approach, the teacher plays a central role in controlling, guiding, and organizing instructional activities. Through presentation, explanation, and detailed guidance, the teacher helps learners access, acquire, and clearly understand the lesson content. This teaching strategy is effective for providing systematic knowledge and introducing new skills, thereby establishing a solid foundation for learners to apply such knowledge to professional practice and develop practical competencies.</p> | <ul style="list-style-type: none"> <li>- Lecture/Presentation</li> <li>- Explanation and Illustration</li> <li>- Question–Answer Interaction</li> <li>- Problem-posing</li> <li>- Simulation</li> <li>- Demonstration</li> </ul>                                   |
| 2  | <p><b>Indirect Instruction:</b> Indirect instruction is a teaching strategy in which learners are provided with opportunities to explore and construct knowledge through learning activities without relying entirely on the lecturer’s direct transmission of information. In this strategy, the lecturer acts as a facilitator who organizes, guides, and supports the learning process rather than delivering all the instructional content directly. Learners are encouraged to actively engage in the learning process, apply critical thinking skills, and develop their ability to analyze</p>  | <ul style="list-style-type: none"> <li>- Case-based learning</li> <li>- Problem-based learning</li> <li>- Guiding questions</li> <li>- Online teaching</li> <li>- Assignments</li> <li>- Discussion</li> <li>- Debate</li> <li>- Project-based learning</li> </ul> |

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|   | and solve problems. Through various learning activities, this strategy helps learners enhance their capacity for self-directed learning and independent inquiry, while also fostering a stronger sense of responsibility and autonomy in their learning.   |  |
| 3 | <b>Experiential Learning:</b> Experiential learning consists of four stages: concrete experience, in which learners participate in practical activities such as group discussions, experimental practice, or field trips; reflective observation, during which learners reflect on and analyze the results, behaviors, and emotions arising from their experiences; abstract conceptualization, in which learners formulate concepts or theoretical insights based on their reflections; and active experimentation, where learners apply the acquired knowledge to new situations in order to test and refine their understanding. This approach not only facilitates the development of knowledge and skills but also enhances learners' attitudes and engagement in the learning process. | <ul style="list-style-type: none"> <li>- Experiential learning</li> <li>- Internship</li> <li>- Fieldwork</li> <li>- Simulation</li> <li>- Practice</li> <li>- Discussion</li> <li>- Project-based learning</li> </ul>                     |
| 4 | <b>Interactive Teaching:</b> Interactive teaching is a teaching strategy in which learners not only receive knowledge from the instructor but also interact with their peers, the instructor, and the learning content. In this approach, the instructor organizes and facilitates the learning process, while students actively participate in discussions, dialogue, and collaborative activities to construct knowledge. This process involves two-way interaction, continuous feedback, and adaptation, thereby fostering the development of communication, collaboration, critical thinking, and problem-solving skills, as well as enhancing learners' confidence and active engagement in learning.   | <ul style="list-style-type: none"> <li>- Interactive lectures</li> <li>- Group work</li> <li>- Discussions</li> <li>- Debates</li> <li>- Practice</li> <li>- Internships</li> <li>- Fieldwork</li> <li>- Project-based learning</li> </ul> |
| 5 | <b>Blended Learning (Face-to-Face and Online Instruction):</b> A form of instruction in which part of the learning content is delivered through face-to-face classes and the remaining part is conducted through an online environment using LMS, videos, discussion forums, and online assignments.   | <ul style="list-style-type: none"> <li>- Face-to-face theoretical instruction</li> <li>- Online practice and discussion (via LMS)</li> </ul>   |
| 6 | <b>Self-directed Learning:</b> Self-directed learning is a learning strategy in which learners guide and regulate their own learning process with little or no direct supervision  | <ul style="list-style-type: none"> <li>- Online learning</li> <li>- Homework assignments</li> </ul> <p>Self-directed learning</p>  |

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|  | from the instructor. Learners actively seek knowledge, plan their learning activities, and carry out learning tasks through assignments, projects, or problems suggested by the instructor. This strategy helps develop learners' capacity for independent learning and research, as well as their autonomy and sense of responsibility in the learning process. |  |
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## 7.2. Learning Assessment

The assessment of learning complies with the current undergraduate training regulations of Quy Nhon University.

### 7.2.1. Grading scale

|                      |   |
|----------------------|---|
| <b>Grading scale</b> | The 10-point grading scale is used to assess each course, including component scores, the final examination score, and the overall course grade. The course grade is calculated as the weighted sum of the component scores. A letter grading scale is used to classify academic performance based on the overall course grade. |
|                      | The 4-point grading scale is used to calculate the semester grade point average (GPA) and the cumulative grade point average (CGPA) in order to evaluate students' academic performance after each semester and determine their overall academic results.   |

**Grading System Table**

| <b>Classification</b> | <b>10-point scale</b> | <b>Letter grade</b> | <b>4-point Scale</b> |
|-----------------------|-----------------------|---------------------|----------------------|
| <b>Pass</b>           | From 9.0 to 10        | A+                  | 4.0                  |
|                       | From 8.0 to 8.9       | A                   | 3.5                  |
|                       | From 7.0 to 7.9       | B+                  | 3.0                  |
|                       | From 6.0 to 6.9       | B                   | 2.5                  |
|                       | From 5.0 to 5.9       | C                   | 2.0                  |
|                       | From 4.0 to 4.9       | D                   | 1.5                  |
| <b>Fail</b>           | From 0 to 3.9         | F                   | 0                    |

### 7.2.2. Assessment Methods, Criteria, and Weighting

a) *Theoretical Courses*: Students are assessed through tests, assignments, discussions, and the final course examination. The course grade is calculated in

accordance with the current regulations of Quy Nhon University.

| No | Assessment Method    | Criteria  | Weighting |
|----|----------------------|---|-----------|
| 1  | Formative Assessment | <ul style="list-style-type: none"> <li>- Activeness and level of participation: the degree of initiative, preparation, and active participation in classroom activities.</li> <li>- Class attendance: attendance in required sessions; depending on the number of absences, the instructor determines the corresponding score based on the absence rate.</li> <li>- Homework assignments: accuracy and completeness of the submitted work.</li> <li>- In-class assignments: accuracy of the work and the ability to express personal viewpoints.</li> <li>- Presentations: level of preparation, knowledge content, and presentation skills.</li> <li>- Written tests: correctness of the answers, evaluated based on the answer key or marking scheme.</li> <li>- Discussions and group activities: level of preparation, knowledge content, communication skills, active engagement, and the ability to express personal viewpoints.</li> </ul> | 40%       |
| 2  | Summative Assessment | <ul style="list-style-type: none"> <li>- Written examination: accuracy of answers, evaluated based on the answer key or marking scheme.</li> <li>- Presentation: level of preparation, quality of content, and communication/presentation skills.</li> <li>- Oral examination: accuracy of responses in relation to the required knowledge, effective communication skills, and the ability to express personal viewpoints.</li> </ul>  | 60%       |

*b) Practical Courses:* Students are required to attend all practical sessions according to the teaching schedule. The grade for a practical course is calculated as the average of

all practical assignments completed during the semester and is rounded to one decimal place.

*c) Teaching Practicum Courses:*

Students are required to attend all observation and teaching practicum sessions in accordance with the practicum plan. The practicum content includes: studying the educational context in practice; observation and teaching practice; and observation and practice of educational activities. The assessment criteria are specified in detail in the Teaching Practicum Regulations issued by Quy Nhon University.

*d) Graduation Thesis Course:* Students are assessed based on several criteria, including the format of the thesis report, the quality of the report content, and the quality of the thesis defense. The assessment components are defined according to specific criteria in the evaluation rubric. The graduation thesis is evaluated by the Graduation Thesis Assessment Committee established by the Rector of Quy Nhon University.

**7.2.3. Assessments Methods**

| <b>Assessments Methods</b> |  |
|----------------------------|--|
| Observation Method         | This method is used to assess students' attendance and learning attitudes, including their learning awareness, independence, and creativity. It involves monitoring class attendance, preparation for lessons, participation in discussions, and contributions to classroom activities.                          |
| Assignment Assessment      | This method evaluates the extent to which students complete the assignments given by the instructor related to the lesson during and after class. These assignments may be completed individually or in groups and are graded based on criteria that have been communicated to students in advance.              |
| Presentation Assessment    | Students are required to work individually or in groups and present their results to other students. This activity not only assesses the extent to which students achieve the required subject-specific knowledge but also evaluates the development of skills such as communication, negotiation, and teamwork. |
| Written Assessment Methods | Written assessment methods include essay-type tests and objective tests in the form of multiple-choice questions, or a combination of both.  |



## 8. PROGRAM CONTENT

| No                                    | Course codes | Course Name                               | Semester | Number of credits | In-class hours |          |            | Experiment, Practice | Others | Self-study hours | Prerequisite Course Code | Department in charge of the course              | Note |
|---------------------------------------|--------------|---|----------|-------------------|----------------|----------|------------|----------------------|--------|------------------|--------------------------|---|------|
|                                       |              |   |          |                   | Theory         | Exercise | Discussion |                      |        |                  |                          |   |      |
| <b>I. General Education Knowledge</b> |              |   |          | <b>24</b>         |                |          |            |                      |        |                  |                          |   |      |
| <i>I.1. Political Science and Law</i> |              |   |          | <i>13</i>         |                |          |            |                      |        |                  |                          |   |      |
| 01                                    | 1130299      | Marxist–Leninist Philosophy               | 1        | 3                 | 40             |          | 10         |                      |        | 95               |                          | Political Theory, Law and Public Administration |      |
| 02                                    | 1130049      | Introduction to Law                       | 1        | 2                 | 27             |          | 6          |                      |        | 62               |                          | Political Theory, Law and Public Administration |      |
| 03                                    | 1130300      | Marxist–Leninist Political Economy        | 2        | 2                 | 27             |          | 6          |                      |        | 62               | 1130299                  | Political Theory, Law and Public Administration |      |
| 04                                    | 1130301      | Science Socialism                         | 3        | 2                 | 27             |          | 6          |                      |        | 62               | 1130300                  | Political Theory, Law and Public Administration |      |
| 05                                    | 1130302      | History of the Communist Party of Vietnam | 4        | 2                 | 27             |          | 6          |                      |        | 62               | 1130301                  | Political Theory, Law and Public Administration |      |
| 06                                    | 1130091      | Ho Chi Minh Thoughts                      | 5        | 2                 | 27             |          | 6          |                      |        | 62               | 1130302                  | Political Theory,                               |      |

| No  | Course codes | Course Name  | Sem ester | Num ber of credits | In-class hours |           |             | Exp eriment, Prac tice | Other s | Self - study hours | Prerequ isite Course Code     | Departmen t in charge of the course | N o t e |
|---|--------------|--|-----------|--------------------|----------------|-----------|-------------|------------------------|---------|--------------------|-------------------------------|-------------------------------------|---------|
|   |              |  |           |                    | The ory        | Exe rcise | Disc ussion |                        |         |                    |                               |                                     |         |
|   |              |  |           |                    |                |           |             |                        |         |                    | Law and Public Administration |                                     |         |
| <b><i>1.2. Physical Education and National Defense-Security Education</i></b> |              |  |           | <b>12</b>          |                |           |             |                        |         |                    |                               |                                     |         |
| <b><i>Physical Education: Choose 1 of the following 8 courses:</i></b>        |              |  |           | <b>3</b>           |                |           |             |                        |         |                    |                               |                                     |         |
| 07  | 1120172      | Physical Education 1 (Football 1)                            | 1         | 1                  | 4              |           |             | 26                     |         | 21                 |                               | Physical Education                  |         |
| 08  | 1120173      | Physical Education 2 (Football 2)                            | 2         | 1                  | 4              |           |             | 26                     |         | 21                 | 1120172                       | Physical Education                  |         |
| 09  | 1120174      | Physical Education 3 (Football 3)                            | 3         | 1                  | 4              |           |             | 26                     |         | 21                 | 1120173                       | Physical Education                  |         |
| 10  | 1120175      | Physical Education 1 (Volleyball 1)                          | 1         | 1                  | 4              |           |             | 26                     |         | 21                 |                               | Physical Education                  |         |
| 11  | 1120176      | Physical Education 2 (Volleyball 2)                          | 2         | 1                  | 4              |           |             | 26                     |         | 21                 | 1120175                       | Physical Education                  |         |
| 12  | 1120177      | Physical Education 3 (Volleyball 3)                          | 3         | 1                  | 4              |           |             | 26                     |         | 21                 | 1120176                       | Physical Education                  |         |
| 13  | 1120178      | Physical Education 1 (Basketball 1)                          | 1         | 1                  | 4              |           |             | 26                     |         | 21                 |                               | Physical Education                  |         |
| 14  | 1120179      | Physical Education 2 (Basketball 2)                          | 2         | 1                  | 4              |           |             | 26                     |         | 21                 | 1120178                       | Physical Education                  |         |
| 15  | 1120180      | Physical Education 3 (Basketball 3)                          | 3         | 1                  | 4              |           |             | 26                     |         | 21                 | 1120179                       | Physical Education                  |         |
| 16  | 1120181      | Physical Education 1 (Badminton 1)                           | 1         | 1                  | 4              |           |             | 26                     |         | 21                 |                               | Physical Education                  |         |
| 17  | 1120182      | Physical Education 2 (Badminton 2)                           | 2         | 1                  | 4              |           |             | 26                     |         | 21                 | 1120181                       | Physical Education                  |         |
| 18  | 1120183      | Physical Education 3 (Badminton 3)                           | 3         | 1                  | 4              |           |             | 26                     |         | 21                 | 1120182                       | Physical Education                  |         |
| 19  | 1120184      | Physical Education 1 (Vietnamese Traditional Martial Arts 1) | 1         | 1                  | 4              |           |             | 26                     |         | 21                 |                               | Physical Education                  |         |

| No   | Course codes | Course Name  | Semester | Number of credits | In-class hours |          |            | Experiment, Practice | Others | Self-study hours | Prerequisite Course Code | Department in charge of the course      | Note |
|--|--------------|--|----------|-------------------|----------------|----------|------------|----------------------|--------|------------------|--------------------------|---|------|
|  |              |  |          |                   | Theory         | Exercise | Discussion |                      |        |                  |                          |   |      |
| 20   | 1120185      | Physical Education 2 (Vietnamese Traditional Martial Arts 2) | 2        | 1                 | 4              |          |            | 26                   |        | 21               | 1120184                  | Physical Education                      |      |
| 21   | 1120186      | Physical Education 3 (Vietnamese Traditional Martial Arts 3) | 3        | 1                 | 4              |          |            | 26                   |        | 21               | 1120185                  | Physical Education                      |      |
| 22   | 1120187      | Physical Education 1 (Taekwondo 1)                           | 1        | 1                 | 4              |          |            | 26                   |        | 21               |                          | Physical Education                      |      |
| 23   | 1120188      | Physical Education 2 (Taekwondo 2)                           | 2        | 1                 | 4              |          |            | 26                   |        | 21               | 1120187                  | Physical Education                      |      |
| 24   | 1120189      | Physical Education 3 (Taekwondo 3)                           | 3        | 1                 | 4              |          |            | 26                   |        | 21               | 1120188                  | Physical Education                      |      |
| 25   | 1120190      | Physical Education 1 (Karate-do 1)                           | 1        | 1                 | 4              |          |            | 26                   |        | 21               |                          | Physical Education                      |      |
| 26   | 1120191      | Physical Education 2 (Karate-do 2)                           | 2        | 1                 | 4              |          |            | 26                   |        | 21               | 1120190                  | Physical Education                      |      |
| 27   | 1120192      | Physical Education 3 (Karate-do 3)                           | 3        | 1                 | 4              |          |            | 26                   |        | 21               | 1120191                  | Physical Education                      |      |
| 28   | 1120239      | Physical Education 1 (Pickle ball 1)                         | 1        | 1                 | 4              |          |            | 26                   |        | 21               |                          | Physical Education                      |      |
| 29   | 1120240      | Physical Education 2 (Pickle ball 2)                         | 2        | 1                 | 4              |          |            | 26                   |        | 21               | 1120239                  | Physical Education                      |      |
| 30   | 1120241      | Physical Education 3 (Pickle ball 3)                         | 3        | 1                 | 4              |          |            | 26                   |        | 21               | 1120240                  | Physical Education                      |      |
| <b>National Defense and Security Education</b> |              |  |          | <b>9</b>          |                |          |            |                      |        |                  |                          |   |      |
| 31   | 1120168      | National Defense and Security Education1                     | 5        | 3                 | 37             |          |            | 8                    |        | 82               |                          | National Defense and Security Education |      |
| 32   | 1120169      | National Defense and Security Education 2                    | 5        | 2                 | 22             |          |            | 8                    |        | 52               |                          | National Defense and Security Education |      |
| 33   | 1120170      | National Defense and Security Education3                     | 5        | 2                 | 14             |          |            | 16                   |        | 44               |                          | National Defense and                    |      |

| No   | Course codes | Course Name  | Sem ester | Num ber of credits | In-class hours |           |             | Exp eriment, Prac tice | Other s | Self - study hours | Prerequ isite Course Code | Departmen t in charge of the course     | N o t e |
|--|--------------|--|-----------|--------------------|----------------|-----------|-------------|------------------------|---------|--------------------|---------------------------|---|---------|
|  |              |  |           |                    | The ory        | Exe rcise | Disc ussion |                        |         |                    |                           |   |         |
|  |              |  |           |                    |                |           |             |                        |         |                    | Security Education        |   |         |
| 34   | 1120171      | National Defense and Security Education4               | 5         | 2                  | 4              |           |             | 56                     |         | 36                 |                           | National Defense and Security Education |         |
| <b>I.3. Foreign Languages</b>  |              |  |           | 7                  |                |           |             |                        |         |                    |                           |   |         |
| 35   | 1090061      | English 1  | 1         | 3                  | 30             | 15        |             |                        |         | 100                |                           | Foreign Languages                       |         |
| 36   | 1090166      | English 2  | 2         | 4                  | 40             | 20        |             |                        |         | 135                | 1090061                   | Foreign Languages                       |         |
| <b>I.4. Social Sciences/Mathematics; Natural Sciences–Environment; Management Sciences</b> |              |  |           | 4                  |                |           |             |                        |         |                    |                           |   |         |
| 37   | 2010156      | Pedagogical Communication                              | 4         | 2                  | 20             |           |             | 20                     |         | 55                 | 2030410                   | Education                               |         |
| 38   | 2010171      | Experiential and Career-Oriented Activities in Schools | 5         | 2                  | 20             |           |             | 20                     |         | 55                 | 1100026                   | Education                               |         |
| <b>II. Professional Education Knowledge</b>  |              |  |           | 114                |                |           |             |                        |         |                    |                           |   |         |
| <b>II.1. Fundamental knowledge and Disciplinary Knowledge</b>                              |              |  |           | 24                 |                |           |             |                        |         |                    |                           |   |         |
| 39   | 1050242      | ICT Fundamentals for Education                         | 1         | 3                  | 30             |           |             | 30                     |         | 85                 |                           | Information Technology                  |         |
| 40   | 1100086      | Psychology   | 2         | 3                  | 30             | 10        | 10          |                        |         | 95                 | 1130299                   | Social Sciences and Humanities          |         |
| 41   | 2030410      | Education Studies                                      | 3         | 4                  | 36             | 20        | 0           | 8                      |         | 131                | 1100086                   | Social Sciences and Humanities          |         |
| 42   | 2010103      | Advanced Mathematics 1                                 | 1         | 2                  | 20             | 10        |             |                        |         | 65                 |                           | Education                               |         |
| 43   | 2010104      | Introduction to Natural Sciences                       | 1         | 2                  | 20             | 50        | 10          |                        |         | 60                 |                           | Education                               |         |

| No   | Course codes | Course Name                         | Sem ester | Num ber of credits | In-class hours |           |             | Exp eriment, Pract ice | Other s | Self - study hours | Prerequ isite Course Code | Departmen t in charge of the course | N o t e |
|--|--------------|-------------------------------------|-----------|--------------------|----------------|-----------|-------------|------------------------|---------|--------------------|---------------------------|-------------------------------------|---------|
|  |              |                                     |           |                    | The ory        | Exe rcise | Disc ussion |                        |         |                    |                           |                                     |         |
| 44   | 2010157      | Advanced Mathematics 2              | 2         | 2                  | 20             | 10        |             |                        |         | 65                 | 2010103                   | Education                           |         |
| 45   | 2010150      | Probability and Statistics          | 3         | 2                  | 20             | 10        |             |                        |         | 65                 | 2010157                   | Education                           |         |
| 46   | 2020489      | General Chemistry                   | 1         | 3                  | 30             | 12        | 6           |                        |         | 97                 |                           | Natural Sciences                    |         |
| 47   | 2020507      | General Chemistry Laboratory        | 2         | 1                  |                |           |             | 30                     |         | 15                 | 2020489                   | Natural Sciences                    |         |
| 48   | 2020496      | Earth Science                       | 2         | 2                  | 25             | 5         |             |                        |         | 65                 | 2010104                   | Natural Sciences                    |         |
| <b>II.2. Major and Specialization Knowledge (if any)</b> |              |                                     |           | <b>53</b>          |                |           |             |                        |         |                    |                           |                                     |         |
| <b>II.2.1. Major Knowledge</b>                           |              |                                     |           | <b>53</b>          |                |           |             |                        |         |                    |                           |                                     |         |
| <i>II.2.1a. Compulsory Courses</i>                       |              |                                     |           | <i>47</i>          |                |           |             |                        |         |                    |                           |                                     |         |
| 49   | 2010105      | Cells and Living Systems            | 2         | 3                  | 40             |           | 10          |                        |         | 95                 |                           | Natural Sciences                    |         |
| 50   | 2010106      | Plant Biology                       | 3         | 2                  | 28             |           | 4           |                        |         | 63                 | 2010105                   | Natural Sciences                    |         |
| 51   | 2020500      | Animal Biology                      | 3         | 2                  | 28             |           | 4           |                        |         | 63                 | 2010105                   | Natural Sciences                    |         |
| 52   | 2020510      | Biology Laboratory 1                | 3         | 1                  |                |           |             | 30                     |         | 15                 | 2010105                   | Natural Sciences                    |         |
| 53   | 2020836      | Human and Health                    | 3         | 3                  | 40             |           | 10          |                        |         | 95                 | 2010105                   | Natural Sciences                    |         |
| 54   | 2020472      | Fundamentals of Physics 1           | 3         | 3                  | 30             | 12        | 6           |                        |         | 97                 | 2010157                   | Natural Sciences                    |         |
| 55   | 2020502      | Evolution and Environmental Ecology | 4         | 2                  | 28             |           | 4           |                        |         | 63                 | 2010106<br>2020500        | Natural Sciences                    |         |
| 56   | 2020477      | Genetics                            | 4         | 3                  | 40             |           | 10          |                        |         | 95                 | 2010105                   | Natural Sciences                    |         |
| 57   | 2020511      | Biology Laboratory 2                | 4         | 1                  |                |           |             | 30                     |         | 15                 | 2010106<br>2020500        | Natural Sciences                    |         |
| 58   | 2020493      | Inorganic Chemistry 1               | 4         | 2                  | 20             | 10        |             |                        |         | 65                 | 2020489                   | Natural Sciences                    |         |

| No  | Course codes | Course Name                               | Semester | Number of credits | In-class hours |          |            | Experiment, Practice | Others | Self-study hours | Prerequisite Course Code | Department in charge of the course | Note |
|---|--------------|---|----------|-------------------|----------------|----------|------------|----------------------|--------|------------------|--------------------------|------------------------------------|------|
|   |              |   |          |                   | Theory         | Exercise | Discussion |                      |        |                  |                          |                                    |      |
| 59  | 2020490      | Organic Chemistry 1                       | 4        | 2                 | 24             | 6        |            |                      |        | 65               | 2020489                  | Natural Sciences                   |      |
| 60  | 2020473      | Fundamentals of Physics 2                 | 4        | 3                 | 30             | 12       | 6          |                      |        | 97               | 2020472                  | Natural Sciences                   |      |
| 61  | 2020504      | Physics Laboratory 1                      | 4        | 1                 |                |          |            | 30                   |        | 15               | 2020472                  | Natural Sciences                   |      |
| 62  | 2020512      | Biology Laboratory 3                      | 5        | 1                 |                |          |            | 30                   |        | 15               | 2020502<br>2020477       | Natural Sciences                   |      |
| 63  | 2020494      | Inorganic Chemistry 2                     | 5        | 2                 | 20             | 10       |            |                      |        | 65               | 2020493                  | Natural Sciences                   |      |
| 64  | 2020491      | Organic Chemistry 2                       | 5        | 2                 | 24             | 6        |            |                      |        | 65               | 2020490                  | Natural Sciences                   |      |
| 65  | 2020474      | Fundamentals of Physics 3                 | 5        | 2                 | 20             | 8        | 4          |                      |        | 63               | 2020473                  | Natural Sciences                   |      |
| 66  | 2020503      | Astronomy                                 | 5        | 2                 | 22             | 4        | 8          |                      |        | 61               | 2020473                  | Natural Sciences                   |      |
| 67  | 2020475      | Oscillations and Waves                    | 5        | 2                 | 16             | 10       | 8          |                      |        | 61               | 2020473                  | Natural Sciences                   |      |
| 68  | 2020505      | Physics Laboratory 2                      | 5        | 1                 |                |          |            | 30                   |        | 15               | 2020473                  | Natural Sciences                   |      |
| 69  | 2020509      | Inorganic Chemistry Laboratory            | 6        | 1                 |                |          |            | 30                   |        | 15               | 2020494                  | Natural Sciences                   |      |
| 70  | 2020508      | Organic Chemistry Laboratory              | 6        | 1                 |                |          |            | 30                   |        | 15               | 2020491                  | Natural Sciences                   |      |
| 71  | 2020492      | Chemistry and Life                        | 6        | 2                 | 24             | 0        | 12         |                      |        | 59               | 2020494<br>2020491       | Natural Sciences                   |      |
| 72  | 2020837      | Energy and Life                           | 6        | 2                 | 19             | 6        | 10         |                      |        | 60               | 2020474                  | Natural Sciences                   |      |
| 73  | 2020506      | Physics Laboratory 3                      | 6        | 1                 |                |          |            | 30                   |        | 15               | 2020474                  | Natural Sciences                   |      |
| <i>II.2.1b. Elective Courses</i>              |              |   |          | 6                 |                |          |            |                      |        |                  |                          |                                    |      |
| <i>Choose 01 of the following 03 courses:</i> |              |   |          | 2                 |                |          |            |                      |        |                  |                          |                                    |      |
| 74  | 2020513      | Metabolism and Energy in Living Organisms | 7        | 2                 | 28             |          | 4          |                      |        | 63               | 2010105                  | Natural Sciences                   |      |

| No   | Course codes | Course Name  | Semester | Number of credits | In-class hours |          |            | Experiment, Practice | Others | Self-study hours | Prerequisite Course Code | Department in charge of the course | Note |
|--|--------------|--|----------|-------------------|----------------|----------|------------|----------------------|--------|------------------|--------------------------|------------------------------------|------|
|  |              |  |          |                   | Theory         | Exercise | Discussion |                      |        |                  |                          |                                    |      |
| 75   | 2020838      | Introduction to Biotechnology                        | 7        | 2                 | 28             |          | 4          |                      |        | 63               | 2020477                  | Natural Sciences                   |      |
| 76   | 2020839      | Sex Education and Reproductive Health                | 7        | 2                 | 28             |          | 4          |                      |        | 63               | 2020836                  | Natural Sciences                   |      |
| <i>Choose 01 of the following 03 courses:</i>              |              |  |          | 2                 |                |          |            |                      |        |                  |                          |                                    |      |
| 77   | 2020470      | Modern Physicochemical Analytical Methods            | 7        | 2                 | 20             |          | 2          | 18                   |        | 55               | 2020494<br>2020491       | Natural Sciences                   |      |
| 78   | 2020488      | Chemistry of Natural Compounds                       | 7        | 2                 | 15             | 5        |            | 20                   |        | 55               | 2020491                  | Natural Sciences                   |      |
| 79   | 2020840      | Environmental Chemistry                              | 7        | 2                 | 28             |          | 4          |                      |        | 63               | 2020494<br>2020491       | Natural Sciences                   |      |
| <i>Choose 01 of the following 03 courses:</i>              |              |  |          | 2                 |                |          |            |                      |        |                  |                          |                                    |      |
| 80   | 2020841      | Environmental Protection and Sustainable Development | 7        | 2                 | 20             | 6        | 8          |                      |        | 61               | 2020474                  | Natural Sciences                   |      |
| 81   | 2020514      | Modern Physics                                       | 7        | 2                 | 20             | 8        | 4          |                      |        | 68               | 2020474                  | Natural Sciences                   |      |
| 82   | 2020517      | Cosmology  | 7        | 2                 | 22             | 4        | 8          |                      |        | 61               | 2020503                  | Natural Sciences                   |      |
| <b>II.3. Supplementary Knowledge</b>                       |              |  |          | <b>31</b>         |                |          |            |                      |        |                  |                          |                                    |      |
| <b>II.3.1. Professional Training and Skill Development</b> |              |  |          | <b>24</b>         |                |          |            |                      |        |                  |                          |                                    |      |
| <b>II.3.1a. Compulsory Courses</b>                         |              |  |          | <b>22</b>         |                |          |            |                      |        |                  |                          |                                    |      |
| 83   | 2010127      | Theories of Teaching Natural Sciences                | 5        | 2                 | 20             | 5        | 10         |                      |        | 60               | 1100026                  | Education                          |      |
| 84   | 2010116      | Teaching the Theme of Living Organisms               | 6        | 2                 | 20             | 5        | 10         |                      |        | 60               | 2010127                  | Education                          |      |
| 85   | 2010114      | Teaching the Theme of Matter and Its Transformations | 6        | 2                 | 20             | 5        | 10         |                      |        | 60               | 2010127                  | Education                          |      |
| 86   | 2010115      | Teaching the Theme of Energy and Its Transformations | 6        | 2                 | 20             | 5        | 10         |                      |        | 60               | 2010127                  | Education                          |      |







## 9. TENTATIVE TEACHING PLAN

### Semester 1:

| No  | Course code | Course name  | Number of credits | In-class hours |          |            | Experiment, Practice | Others | Self-study hours | Prerequisite Course Code | Department in charge of the course              | Note |
|---|-------------|--|-------------------|----------------|----------|------------|----------------------|--------|------------------|--------------------------|---|------|
|   |             |  |                   | Theory         | Exercise | Discussion |                      |        |                  |                          |   |      |
| 1   | 1130299     | Marxist–Leninist Philosophy                                  | 3                 | 40             |          | 10         |                      |        | 95               |                          | Political Theory, Law and Public Administration |      |
| 2   | 1130049     | Introduction to Law  | 2                 | 27             |          | 6          |                      |        | 62               |                          | Political Theory, Law and Public Administration |      |
| 3   | 1090061     | English 1  | 3                 | 30             | 15       |            |                      |        | 100              |                          | Foreign Languages                               |      |
| 4   | 1050242     | ICT Fundamentals for Education                               | 3                 | 30             |          |            | 30                   |        | 85               |                          | Information Technology                          |      |
| 5   | 2010103     | Advanced Mathematics 1                                       | 2                 | 20             | 10       |            |                      |        | 65               |                          | Education                                       |      |
| 6   | 2010104     | Introduction to Natural Sciences                             | 2                 | 20             | 5        | 10         |                      |        | 60               |                          | Education                                       |      |
| 7   | 2020489     | General Chemistry  | 3                 | 30             | 12       | 6          |                      |        | 97               |                          | Natural Sciences                                |      |
| <b>Choose 1 of the following 8 courses:</b> |             |  | <b>1</b>          |                |          |            |                      |        |                  |                          |   |      |
| 8   | 1120172     | Physical Education 1 (Football 1)                            | 1                 | 4              |          |            | 26                   |        | 21               |                          | Physical Education                              |      |
| 9   | 1120175     | Physical Education 1 (Volleyball 1)                          | 1                 | 4              |          |            | 26                   |        | 21               |                          | Physical Education                              |      |
| 10  | 1120178     | Physical Education 1 (Basketball 1)                          | 1                 | 4              |          |            | 26                   |        | 21               |                          | Physical Education                              |      |
| 11  | 1120181     | Physical Education 1 (Badminton 1)                           | 1                 | 4              |          |            | 26                   |        | 21               |                          | Physical Education                              |      |
| 12  | 1120184     | Physical Education 1 (Vietnamese Traditional Martial Arts 1) | 1                 | 4              |          |            | 26                   |        | 21               |                          | Physical Education                              |      |
| 13  | 1120187     | Physical Education 1 (Taekwondo 1)                           | 1                 | 4              |          |            | 26                   |        | 21               |                          | Physical Education                              |      |

| No   | Course code | Course name                          | Number of credits | In-class hours |          |            | Experiment, Practice | Others | Self-study hours | Prerequisite Course Code | Department in charge of the course | Note |
|--|-------------|--------------------------------------|-------------------|----------------|----------|------------|----------------------|--------|------------------|--------------------------|------------------------------------|------|
|  |             |                                      |                   | Theory         | Exercise | Discussion |                      |        |                  |                          |                                    |      |
| 14   | 1120190     | Physical Education 1 (Karate-do 1)   | 1                 | 4              |          |            | 26                   |        | 21               |                          | Physical Education                 |      |
| 15   | 1120239     | Physical Education 1 (Pickle ball 1) | 1                 | 4              |          |            | 26                   |        |                  |                          | Physical Education                 |      |
| <b>Total (excluding Physical Education courses):</b> |             |                                      | <b>18</b>         |                |          |            |                      |        |                  |                          |                                    |      |

### Semester 2:

| No  | Course code | Course name                        | Number of credits | In-class hours |          |            | Experiment, Practice | Others | Self-study hours | Prerequisite Course Code | Department in charge of the course              | Note    |                    |
|---|-------------|------------------------------------|-------------------|----------------|----------|------------|----------------------|--------|------------------|--------------------------|---|---------|--------------------|
|   |             |                                    |                   | Theory         | Exercise | Discussion |                      |        |                  |                          |   |         |                    |
| 1   | 1130300     | Marxist–Leninist Political Economy | 2                 | 27             |          | 6          |                      |        | 62               | 1130299                  | Political Theory, Law and Public Administration |         |                    |
| 2   | 1090166     | English 2                          | 4                 | 40             | 20       |            |                      |        | 135              | 1090061                  | Foreign Languages                               |         |                    |
| 3   | 1100086     | Psychology                         | 3                 | 30             | 10       | 10         |                      |        | 95               | 1130299                  | Social Sciences and Humanities                  |         |                    |
| 4   | 2010157     | Advanced Mathematics 2             | 2                 | 20             | 10       |            |                      |        | 65               | 2010103                  | Education                                       |         |                    |
| 5   | 2010105     | Cells and Living Systems           | 3                 | 40             |          | 10         |                      |        | 95               |                          | Natural Sciences                                |         |                    |
| 6   | 2020507     | General Chemistry Laboratory       | 1                 |                |          |            | 30                   |        | 15               | 2020489                  | Natural Sciences                                |         |                    |
| 7   | 2020496     | Earth Science                      | 2                 | 25             | 5        |            |                      |        | 65               | 2010104                  | Natural Sciences                                |         |                    |
| <b>Choose 1 of the following 8 courses:</b> |             |                                    | <b>1</b>          |                |          |            |                      |        |                  |                          |   |         |                    |
| 8   | 1120173     | Physical Education (Football 2)    | 2                 | 1              | 4        |            |                      |        | 26               |                          | 21  | 1120172 | Physical Education |

| No   | Course code | Course name  | Number of credits | In-class hours |          |            | Experiment, Practice | Others | Self-study hours | Prerequisite Course Code | Department in charge of the course | Note |
|--|-------------|--|-------------------|----------------|----------|------------|----------------------|--------|------------------|--------------------------|------------------------------------|------|
|  |             |  |                   | Theory         | Exercise | Discussion |                      |        |                  |                          |                                    |      |
| 9  | 1120176     | Physical Education (Volleyball 2)                          | 2                 | 1              | 4        |            | 26                   |        | 21               | 1120175                  | Physical Education                 |      |
| 10   | 1120179     | Physical Education (Basketball 2)                          | 2                 | 1              | 4        |            | 26                   |        | 21               | 1120178                  | Physical Education                 |      |
| 11   | 1120182     | Physical Education (Badminton 2)                           | 2                 | 1              | 4        |            | 26                   |        | 21               | 1120181                  | Physical Education                 |      |
| 12   | 1120185     | Physical Education (Vietnamese Traditional Martial Arts 2) | 2                 | 1              | 4        |            | 26                   |        | 21               | 1120184                  | Physical Education                 |      |
| 13   | 1120188     | Physical Education (Taekwondo 2)                           | 2                 | 1              | 4        |            | 26                   |        | 21               | 1120187                  | Physical Education                 |      |
| 14   | 1120191     | Physical Education (Karate-do 2)                           | 2                 | 1              | 4        |            | 26                   |        | 21               | 1120190                  | Physical Education                 |      |
| 15   | 1120240     | Physical Education (Pickle ball 2)                         | 2                 | 1              | 4        |            | 26                   |        | 21               | 1120239                  | Physical Education                 |      |
| <b>Total (excluding Physical Education courses):</b> |             |  | <b>17</b>         |                |          |            |                      |        |                  |                          |                                    |      |

### Semester 3:

| No | Course code | Course name                | Number of credits | In-class hours |          |            | Experiment, Practice | Others | Self-study hours | Prerequisite Course Code | Department in charge of the course              | Note |
|----|-------------|----------------------------|-------------------|----------------|----------|------------|----------------------|--------|------------------|--------------------------|---|------|
|    |             |                            |                   | Theory         | Exercise | Discussion |                      |        |                  |                          |   |      |
| 1  | 1130301     | Science Socialism          | 2                 | 27             |          | 6          |                      |        | 62               | 1130300                  | Political Theory, Law and Public Administration |      |
| 2  | 2030410     | Education Studies          | 4                 | 36             | 20       | 0          | 8                    |        | 131              | 1100086                  | Social Sciences and Humanities                  |      |
| 3  | 2010150     | Probability and Statistics | 2                 | 20             | 10       |            |                      |        | 65               | 2010157                  | Education                                       |      |
| 4  | 2010106     | Plant Biology              | 2                 | 28             |          | 4          |                      |        | 63               | 2010105                  | Natural Sciences                                |      |
| 5  | 2020500     | Animal Biology             | 2                 | 28             |          | 4          |                      |        | 63               | 2010105                  | Natural Sciences                                |      |

| No   | Course code | Course name  | Number of credits | In-class hours |          |            | Experiment, Practice | Others | Self-study hours | Prerequisite Course Code | Department in charge of the course | Note |
|--|-------------|--|-------------------|----------------|----------|------------|----------------------|--------|------------------|--------------------------|------------------------------------|------|
|  |             |  |                   | Theory         | Exercise | Discussion |                      |        |                  |                          |                                    |      |
| 6  | 2020510     | Biology Laboratory 1                                       | 1                 |                |          |            | 30                   |        | 15               | 2010105                  | Natural Sciences                   |      |
| 7  | 2020836     | Human and Health   | 3                 | 40             |          | 10         |                      |        | 95               | 2010105                  | Natural Sciences                   |      |
| 8  | 2020472     | Fundamentals of Physics 1                                  | 3                 | 30             | 12       | 6          |                      |        | 97               | 2010157                  | Natural Sciences                   |      |
| <b>Choose 1 of the following 8 courses:</b>          |             |  | <b>1</b>          |                |          |            |                      |        |                  |                          |                                    |      |
| 9  | 1120174     | Physical Education (Football 3)                            | 3                 | 1              | 4        |            | 26                   |        | 21               | 1120173                  | Physical Education                 |      |
| 10   | 1120177     | Physical Education (Volleyball 3)                          | 3                 | 1              | 4        |            | 26                   |        | 21               | 1120176                  | Physical Education                 |      |
| 11   | 1120180     | Physical Education (Basketball 3)                          | 3                 | 1              | 4        |            | 26                   |        | 21               | 1120179                  | Physical Education                 |      |
| 12   | 1120183     | Physical Education (Badminton 3)                           | 3                 | 1              | 4        |            | 26                   |        | 21               | 1120182                  | Physical Education                 |      |
| 13   | 1120186     | Physical Education (Vietnamese Traditional Martial Arts 3) | 3                 | 1              | 4        |            | 26                   |        | 21               | 1120185                  | Physical Education                 |      |
| 14   | 1120189     | Physical Education (Taekwondo 3)                           | 3                 | 1              | 4        |            | 26                   |        | 21               | 1120188                  | Physical Education                 |      |
| 15   | 1120192     | Physical Education (Karate-do 3)                           | 3                 | 1              | 4        |            | 26                   |        | 21               | 1120191                  | Physical Education                 |      |
| 16   | 1120241     | Physical Education (Pickle ball 3)                         | 3                 | 1              | 4        |            | 26                   |        | 21               | 1120240                  | Physical Education                 |      |
| <b>Total (excluding Physical Education courses):</b> |             |  | <b>19</b>         |                |          |            |                      |        |                  |                          |                                    |      |

**Semester 4:**

| No | Course code | Course name                               | Number of credits | In-class hours |          |            | Experiment, Practice | Others | Self-study hours | Prerequisite Course Code | Department in charge of the course              | Note |
|----|-------------|---|-------------------|----------------|----------|------------|----------------------|--------|------------------|--------------------------|---|------|
|    |             |   |                   | Theory         | Exercise | Discussion |                      |        |                  |                          |   |      |
| 1  | 1130302     | History of the Communist Party of Vietnam | 2                 | 27             |          | 6          |                      |        | 62               | 1130301                  | Political Theory, Law and Public Administration |      |

| No            | Course code | Course name                         | Number of credits | In-class hours |          |            | Experiment, Practice | Others | Self-study hours | Prerequisite Course Code | Department in charge of the course | Note |
|---------------|-------------|-------------------------------------|-------------------|----------------|----------|------------|----------------------|--------|------------------|--------------------------|------------------------------------|------|
|               |             |                                     |                   | Theory         | Exercise | Discussion |                      |        |                  |                          |                                    |      |
| 2             | 2010156     | Pedagogical Communication           | 2                 | 20             |          |            | 20                   |        | 55               | 2030410                  | Education                          |      |
| 3             | 2020502     | Evolution and Environmental Ecology | 2                 | 28             |          | 4          |                      |        | 63               | 2010106<br>2020500       | Natural Sciences                   |      |
| 4             | 2020477     | Genetics                            | 3                 | 40             |          | 10         |                      |        | 95               | 2010105                  | Natural Sciences                   |      |
| 5             | 2020511     | Biology Laboratory 2                | 1                 |                |          |            | 30                   |        | 15               | 2010106<br>2020500       | Natural Sciences                   |      |
| 6             | 2020493     | Inorganic Chemistry 1               | 2                 | 20             | 10       |            |                      |        | 65               | 2020489                  | Natural Sciences                   |      |
| 7             | 2020490     | Organic Chemistry 1                 | 2                 | 24             | 6        |            |                      |        | 65               | 2020489                  | Natural Sciences                   |      |
| 8             | 2020473     | Fundamentals of Physics 2           | 3                 | 30             | 12       | 6          |                      |        | 97               | 2020472                  | Natural Sciences                   |      |
| 9             | 2020504     | Physics Laboratory 1                | 1                 |                |          |            | 30                   |        | 15               | 2020472                  | Natural Sciences                   |      |
| <b>Total:</b> |             |                                     | <b>18</b>         |                |          |            |                      |        |                  |                          |                                    |      |

**Semester 5:**

| No   | Course code | Course name  | Number of credits | In-class hours |          |            | Experiment, Practice | Others | Self-study hours   | Prerequisite Course Code                        | Department in charge of the course | Note |
|--|-------------|--|-------------------|----------------|----------|------------|----------------------|--------|--------------------|---|------------------------------------|------|
|  |             |  |                   | Theory         | Exercise | Discussion |                      |        |                    |   |                                    |      |
| 1  | 1130091     | Ho Chi Minh Thoughts                                   | 2                 | 27             |          | 6          |                      | 62     | 1130302            | Political Theory, Law and Public Administration |                                    |      |
| 2  | 2010171     | Experiential and Career-Oriented Activities in Schools | 2                 | 20             |          |            | 20                   | 55     | 1100026            | Education                                       |                                    |      |
| 3  | 2020512     | Biology Laboratory 3                                   | 1                 |                |          |            | 30                   | 15     | 2020502<br>2020477 | Natural Sciences                                |                                    |      |
| 4  | 2020494     | Inorganic Chemistry 2                                  | 2                 | 20             | 10       |            |                      | 65     | 2020493            | Natural Sciences                                |                                    |      |
| 5  | 2020491     | Organic Chemistry 2                                    | 2                 | 24             | 6        |            |                      | 65     | 2020490            | Natural Sciences                                |                                    |      |
| 6  | 2020474     | Fundamentals of Physics 3                              | 2                 | 20             | 8        | 4          |                      | 63     | 2020473            | Natural Sciences                                |                                    |      |
| 7  | 2020503     | Astronomy  | 2                 | 22             | 4        | 8          |                      | 61     | 2020473            | Natural Sciences                                |                                    |      |
| 8  | 2020475     | Oscillations and Waves                                 | 2                 | 16             | 10       | 8          |                      | 61     | 2020473            | Natural Sciences                                |                                    |      |
| 9  | 2020505     | Physics Laboratory 2                                   | 1                 |                |          |            | 30                   | 15     | 2020473            | Natural Sciences                                |                                    |      |
| 10   | 2010127     | Theories of Teaching Natural Sciences                  | 2                 | 20             | 5        | 10         |                      | 60     | 1100026            | Education                                       |                                    |      |
| <b>National Defense–Security Education</b> |             |  | <b>9</b>          |                |          |            |                      |        |                    |   |                                    |      |
| 11   | 1120168     | National Defense-Security Education 1                  | 3                 | 37             |          | 8          |                      | 82     |                    | National Defense and Security Education         |                                    |      |
| 12   | 1120169     | National Defense-Security Education 2                  | 2                 | 22             |          | 8          |                      | 52     |                    | National Defense and Security Education         |                                    |      |
| 13   | 1120170     | National Defense-Security Education 3                  | 2                 | 14             |          |            | 16                   | 44     |                    | National Defense and Security Education         |                                    |      |
| 14   | 1120171     | National Defense-Security Education 4                  | 2                 | 4              |          |            | 56                   | 36     |                    | National Defense and Security Education         |                                    |      |

| No  | Course code | Course name        | Number of credits | In-class hours |          |            | Experiment, Practice | Others | Self-study hours | Prerequisite Course Code | Department in charge of the course | Note |
|---|-------------|--------------------|-------------------|----------------|----------|------------|----------------------|--------|------------------|--------------------------|------------------------------------|------|
|   |             |                    |                   | Theory         | Exercise | Discussion |                      |        |                  |                          |                                    |      |
| <b>Total</b> (excluding National Defense-Security courses): |             | National Education | <b>18</b>         |                |          |            |                      |        |                  |                          |                                    |      |

**Semester 6:**

| No            | Course code | Course name  | Number of credits | In-class hours |          |            | Experiment, Practice | Others              | Self-study hours | Prerequisite Course Code | Department in charge of the course | Note |
|---------------|-------------|--|-------------------|----------------|----------|------------|----------------------|---------------------|------------------|--------------------------|------------------------------------|------|
|               |             |  |                   | Theory         | Exercise | Discussion |                      |                     |                  |                          |                                    |      |
| 1             | 2020509     | Inorganic Chemistry Laboratory                           | 1                 |                |          |            | 30                   |                     | 15               | 2020494                  | Natural Sciences                   |      |
| 2             | 2020508     | Organic Chemistry Laboratory                             | 1                 |                |          |            | 30                   |                     | 15               | 2020491                  | Natural Sciences                   |      |
| 3             | 2020492     | Chemistry and Life                                       | 2                 | 24             | 0        | 12         |                      |                     | 59               | 2020494<br>2020491       | Natural Sciences                   |      |
| 4             | 2020837     | Energy and Life  | 2                 | 19             | 6        | 10         |                      |                     | 60               | 2020474                  | Natural Sciences                   |      |
| 5             | 2020506     | Physics Laboratory 3                                     | 1                 |                |          |            | 30                   |                     | 15               | 2020474                  | Natural Sciences                   |      |
| 6             | 2010116     | Teaching the Theme of Living Organisms                   | 2                 | 20             | 5        | 10         |                      |                     | 60               | 2010127                  | Education                          |      |
| 7             | 2010114     | Teaching the Theme of Matter and Its Transformations     | 2                 | 20             | 5        | 10         |                      |                     | 60               | 2010127                  | Education                          |      |
| 8             | 2010115     | Teaching the Theme of Energy and Its Transformations     | 2                 | 20             | 5        | 10         |                      |                     | 60               | 2010127                  | Education                          |      |
| 9             | 2010129     | Applied Educational Research in Natural Science Teaching | 3                 | 15             | 15       | 30         |                      |                     | 85               | 2010127                  | Education                          |      |
| 10            | 2010136     | Teaching Skills Development 1                            | 2                 |                |          |            | 60                   |                     | 35               | 2010127                  | Education                          |      |
| 11            | 2010231     | Professional Fieldwork                                   | 1                 |                |          |            |                      | Practical Fieldwork |                  |                          | Education                          |      |
| <b>Total:</b> |             |  | <b>19</b>         |                |          |            |                      |                     |                  |                          |                                    |      |

**Semester 7:**

| No  | Course code | Course name   | Number of credits | In-class hours |          |            | Experiment, Practice | Others             | Self-study hours | Prerequisite Course Code      | Department in charge of the course            | Note |
|---|-------------|---|-------------------|----------------|----------|------------|----------------------|--------------------|------------------|-------------------------------|---|------|
|   |             |   |                   | Theory         | Exercise | Discussion |                      |                    |                  |                               |   |      |
| 1   | 2010142     | Experiments in Natural Science Teaching                           | 3                 |                |          |            | 90                   |                    | 55               | 2010116<br>2010114<br>2010115 | Education                                     |      |
| 2   | 2010138     | Teaching Skills Development 2                                     | 2                 |                |          |            | 60                   |                    | 35               | 2010136                       | Education                                     |      |
| 3   | 2010123     | Assessment and Evaluation in Natural Science Teaching             | 2                 | 16             | 9        | 10         |                      |                    | 60               | 2010116<br>2010114<br>2010115 | Education                                     |      |
| 4   | 2010149     | Application of Information Technology in Natural Science Teaching | 2                 |                |          |            | 60                   |                    | 35               | 2010116<br>2010114<br>2010115 | Education                                     |      |
| 5   | 2010143     | Teaching Practicum 1  | 1                 |                |          |            |                      | Teaching Practicum |                  | 2010136                       | Education                                     |      |
| <i>Choose 01 of the following 03 courses:</i> |             |   | 2                 |                |          |            |                      |                    |                  |                               |   |      |
| 6   | 2010141     | Organizing STEM Educational Activities in Lower Secondary Schools | 2                 | 21             | 4        | 10         |                      |                    | 60               | 2010116<br>2010114<br>2010115 | Education                                     |      |
| 7   | 1150422     | Start-up  | 2                 | 20             | 5        | 10         |                      |                    | 60               | 1130049                       | Finance and Banking & Business Administration |      |
| 8   | 2010128     | Active Teaching Methods and Techniques in Natural Science         | 2                 | 25             | 5        |            |                      |                    | 65               | 2010116<br>2010114<br>2010115 | Education                                     |      |
| <i>Choose 01 of the following 03 courses:</i> |             |   | 2                 |                |          |            |                      |                    |                  |                               |   |      |
| 9   | 2020513     | Metabolism and Energy in Living Organisms                         | 2                 | 28             |          | 4          |                      |                    | 63               | 2010105                       | Natural Sciences                              |      |
| 10  | 2020838     | Introduction to Biotechnology                                     | 2                 | 28             |          | 4          |                      |                    | 63               | 2020477                       | Natural Sciences                              |      |

| No  | Course code | Course name  | Number of credits | In-class hours |          |            | Experiment, Practice | Others | Self-study hours | Prerequisite Course Code | Department in charge of the course | Note |
|---|-------------|--|-------------------|----------------|----------|------------|----------------------|--------|------------------|--------------------------|------------------------------------|------|
|   |             |  |                   | Theory         | Exercise | Discussion |                      |        |                  |                          |                                    |      |
| 11  | 2020839     | Sex Education and Reproductive Health                | 2                 | 28             |          | 4          |                      |        | 63               | 2020836                  | Natural Sciences                   |      |
| <i>Choose 01 of the following 03 courses:</i> |             |  | 2                 |                |          |            |                      |        |                  |                          |                                    |      |
| 12  | 2020470     | Modern Physicochemical Analytical Methods            | 2                 | 20             |          | 2          | 18                   |        | 55               | 2020494<br>2020491       | Natural Sciences                   |      |
| 13  | 2020488     | Chemistry of Natural Compounds                       | 2                 | 15             | 5        |            | 20                   |        | 55               | 2020491                  | Natural Sciences                   |      |
| 14  | 2020840     | Environmental Chemistry                              | 2                 | 28             |          | 4          |                      |        | 63               | 2020494<br>2020491       | Natural Sciences                   |      |
| <i>Choose 01 of the following 03 courses:</i> |             |  |                   |                |          |            |                      |        |                  |                          |                                    |      |
| 15  | 2020841     | Environmental Protection and Sustainable Development | 2                 | 20             | 6        | 8          |                      |        | 61               | 2020474                  | Natural Sciences                   |      |
| 16  | 2020514     | Modern Physics                                       | 2                 | 20             | 8        | 4          |                      |        | 68               | 2020474                  | Natural Sciences                   |      |
| 17  | 2020517     | Cosmology  | 2                 | 22             | 4        | 8          |                      |        | 61               | 2020503                  | Natural Sciences                   |      |
| <b>Total:</b>                                 |             |  | <b>18</b>         |                |          |            |                      |        |                  |                          |                                    |      |

**Semester 8:**

| No                         | Course code | Course name   | Number of credits | In-class hours |          |            | Experiment, Practice | Others            | Self-study hours | Prerequisite Course Code                 | Department in charge of the course | Note |
|----------------------------|-------------|---|-------------------|----------------|----------|------------|----------------------|-------------------|------------------|--|------------------------------------|------|
|                            |             |   |                   | Theory         | Exercise | Discussion |                      |                   |                  |  |                                    |      |
| 1                          | 2010145     | Teaching Practicum 2                                    | 5                 |                |          |            |                      | TT                | 2010143          | Education                                |                                    |      |
| <b>Graduation Thesis</b>   |             |   |                   |                |          |            |                      |                   |                  |  |                                    |      |
| 2                          | 2010124     | Graduation Thesis                                       | 6                 |                |          |            |                      | Graduation Thesis |                  | Education                                |                                    |      |
| <b>Alternative Courses</b> |             |   |                   |                |          |            |                      |                   |                  |  |                                    |      |
| 3                          | 2010110     | Exercises in Natural Sciences at Lower Secondary School | 3                 | 25             | 15       | 10         |                      |                   | 95               | 2010116<br>2010114<br>2010115            | Education                          |      |
| 4                          | 2020497     | Selected Topics in Natural Sciences                     | 3                 | 39             |          | 12         |                      |                   | 84               | 2020511<br>2020494<br>2020491<br>2020474 | Natural Sciences                   |      |
| <b>Total:</b>              |             |   | <b>11</b>         |                |          |            |                      |                   |                  |  |                                    |      |

## 10. GUIDELINES FOR THE IMPLEMENTATION OF THE PROGRAM

- This training program is applied from the 2025 admission cohort for students majoring in Natural Science Teacher Education.

- The training process is based on the designed curriculum, training objectives, target learners, workforce requirements, and specific requirements for the program. For elective courses, depending on practical conditions, development trends, and social needs, the Faculty will advise students to select appropriate courses.

- The Dean of the Faculty is responsible for organizing and providing guidance on the principles for developing detailed course syllabi to ensure that the objectives, contents, and requirements of the program are met, while also satisfying the needs of learners and society.

- The program is regularly reviewed, evaluated, and updated. The results of the review and evaluation are used to improve and enhance the quality of the program. The cycle for comprehensive program evaluation is no more than five years.

*Gia Lai, August 01, 2025*

**RECTOR**

**Assoc. Prof. Dr. Doan Duc Tung**