

CHED MEMORANDUM ORDER

No. _____

Series of _____

SUBJECT : POLICIES, STANDARDS, AND GUIDELINES FOR BACHELOR OF CAREER AND TECHNICAL EDUCATION (BCTEd) PROGRAM

In accordance with the pertinent provisions of Republic Act (RA) No. 7722, otherwise known as the “*Higher Education Act of 1994*,” and in pursuance of an outcomes-based quality assurance system under CMO No. 46 s. 2012, and by virtue of *Commission en banc (CEB) Resolution No. _ dated _*, the following policies, standards, and guidelines (PSGs) are hereby adopted and promulgated.

ARTICLE I INTRODUCTION

Section 1. Rationale

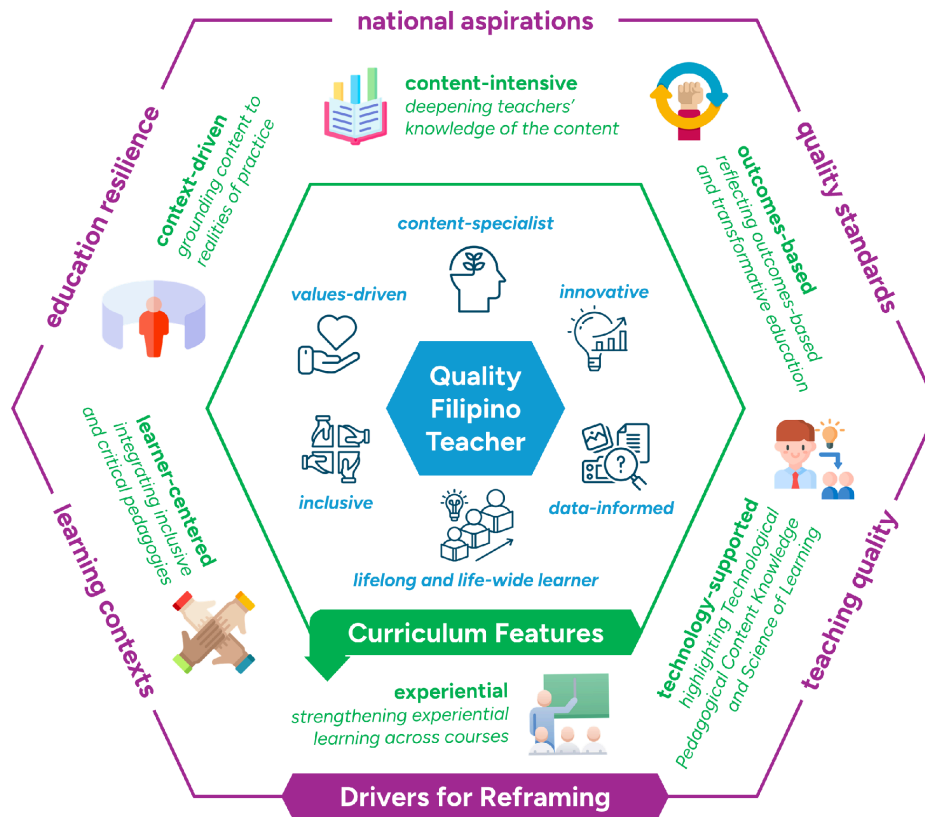
Anchored on the *reframing* of the pre-service teacher education curriculum, this PSG responds to the evolving educational demands driven by pertinent education policies and contextual needs. The PSG builds on the standards previously set in the different undergraduate programs in teacher education based on CMOs 74, 75, 76, 77, 78, 79, 80, and 82, s. 2017, and aligns with the Revised K to 10 Basic Education Curriculum (DepEd Order No. 10, s. 2024), Strengthened Senior High School Curriculum (DepEd Order No. 12, s. 2026), Outcomes-based Education (CMO 46, s. 2012), the Philippine TVET Trainer Qualification Framework (TESDA Resolution No. 2024-18), the Philippine Qualifications Framework (RA 10968), and the Philippine Professional Standards for Teachers (DepEd Order 42, s. 2017). Further, this curriculum directive is in accordance with the Excellence in Teacher Education Act (RA 11713), specifically the Teacher Education Council’s mandate on setting “minimum requirements for teacher education and ensuring link between the outcomes of teacher education programs and the professional standards for teachers... (Section 8c).” Responsive to critical areas on pre-service teacher education, this PSG should strengthen the teacher education ecosystem, reinforce coherence between pre-service training and in-service practice, and support agency among teacher education institutions (TEIs).

The Reframed Pre-service Teacher Education Curriculum Framework

The *reframed* pre-service teacher education curriculum centers on developing the **Quality Filipino Teacher**. Represented conceptually as a hexagon, the desired **outcome** is placed at the core, complemented by the alignment and interrelationships among the **drivers** and enabling curriculum **features**. **Learning contexts** and **teaching quality** are positioned as key **drivers**, underscoring the importance of a strong community perspective in education. In particular, the framework emphasizes grounding the curriculum in diverse teaching and learning environments to strengthen community immersion as a vital avenue for teacher learning and for fostering meaningful school–community partnerships. The framework further reflects critical **drivers** that foreground the need for **educational resilience**, responsiveness to **national aspirations**, and adherence to **quality standards**.

The **drivers** for *reframing* call for the formation of a **Quality Filipino Teacher** who is **innovative**, **data-informed**, and a **specialist in disciplinary content**. Teaching quality is manifested in the capacity to adapt to and thrive across varied learner contexts, necessitating dispositions that are **inclusive**, **values-driven**, and oriented toward **lifelong and life-wide learning**. These competencies and dispositions inform the curriculum’s **outcomes-based features**, ensuring alignment with established quality standards. Consequently, the curriculum is designed to be both **content-intensive** and **experiential**, grounding theoretical knowledge in the realities of practice. Further, it is **technology-supported** to enhance technological pedagogical content knowledge, while remaining **context-driven** and **learner-centered**, with a sustained emphasis on inclusive practices and critical pedagogies.

The Reframed Pre-service Teacher Education Curriculum Framework



CMO No. XX, s. 2026 specifies the vision and design of the reframed **Bachelor of Career and Technical Education (BCTEd)**. The Sections present the curriculum program components detailing the minimum requirements in outcomes and structure. Curriculum mapping and course programming are presented to illustrate curriculum operationalization. Ultimately, the vision of the degree program is to develop a Quality Filipino Teacher of Career and Technical Education.

ARTICLE II AUTHORITY TO OPERATE

Section 2. Government Recognition

All private higher education institutions (PHEIs) intending to offer the **BCTEd** program must first obtain the necessary authority from the Commission in accordance with this PSG. All PHEIs with an existing **Bachelor of Technology and Livelihood Education (BTLEd)** and **Bachelor of Technical-Vocational Teacher Education (BTVTEd)** programs are required to adopt an outcomes-based approach in accordance with this PSG. State Universities and Colleges (SUCs) and Local Universities and Colleges (LUCs) should likewise strictly adhere to the provisions in these policies and standards.

ARTICLE III GENERAL PROVISIONS

Per Section 13 of RA 7722, the higher education institution shall exercise academic freedom in its curricular offerings but must comply with the minimum requirements for specific academic programs, the general education distribution requirement, and the specific professional courses.

Section 3

The Articles that follow give minimum standards and other requirements. The minimum standards are expressed as a minimum set of desired program outcomes, as set forth in **Article IV Section 6**. The Commission on Higher Education (CHED) and the Teacher Education Council (TEC) *reframed* the pre-service teacher education curriculum to attain such outcomes. *Reframing* involved a critical process of rethinking, adjusting, and updating the existing pre-service teacher education curriculum to better meet the complex needs in education. This *reframed* curriculum is shown in **Article V**. The number of units of this curriculum is hereby prescribed as the “minimum unit requirement” under Section 13 of RA 7722. In designing the curriculum, CHED ensured alignment, as shown in the sample mapping in **Article V Section 9**.

CHED also employed outcomes-based and learner-centered approaches in determining appropriate curriculum delivery methods, as shown in the sample syllabus guides in **Annex I**. A repository of syllabus guides is also provided to serve as a reference for curriculum unpacking.

In **Article VI**, CHED determined the human resource requirements for administration and faculty. Requirements for physical resources, including the library, laboratories, and other facilities, are also provided in **Article VI**.

Section 4

The HEIs are allowed to design curricula suited to their own contexts and missions, provided that they can demonstrate that the same leads to the attainment of the required minimum set of outcomes, albeit by a different route. In the same vein, they have latitude in terms of curriculum delivery and the specification and deployment of human and physical resources, as long as they can show that the attainment of the program outcomes and satisfaction of the program educational objectives can be assured by the alternative means they propose.

HEIs can use the **CHED Implementation Handbook for Outcomes-Based Education (OBE) and the Institutional Sustainability Assessment (ISA)** as guides in preparing their submissions for **Article VII**.

ARTICLE IV PROGRAM SPECIFICATION

Section 5. Program Description

The Bachelor of Career and Technical Education (BCTEd) is an undergraduate program that prepares highly competent, community-rooted, and industry-responsive teachers. It integrates strong pedagogical foundations with specialized technical skills, emphasizing emerging technologies, TPACK-oriented instruction, competency-based training, and workplace-relevant practice. The program features industry-recognized certifications and dual practicum experiences in both school and industry settings, reflecting strong collaboration between academe and industry and ensuring alignment with national standards. It also aims to develop entrepreneurial and innovation-driven graduates capable of designing context-relevant, technology-integrated, and globally aligned learning experiences. Beyond classroom instruction, graduates are prepared to lead curriculum development, workforce training, and community empowerment initiatives, contributing to national development through the advancement of career pathways and the cultivation of a skilled, future-ready Filipino workforce. BCTEd provides foundational instruction across the four majorships—Industrial Arts (IA), Family and Consumer Science (FCS), Information and Communications Technology (ICT), or Agri-Fishery Arts (AFA)—within which pre-service teachers pursue a specific concentration. The aim of the BCTEd Program is to prepare pre-service teachers to teach technical and vocational courses across levels of the educational ladder.

The BCTEd program may also include an optional undergraduate certificate in a focus area. This optional component, designed to respond to context-specific demands grounded in the needs of Filipino learners and the broader Philippine education system, is intended to enrich the undergraduate degree by providing complementary knowledge and skills that equip pre-service teachers with more comprehensive, well-rounded qualifications. Emphasizing learner diversity and inclusive learning environments, the Certificate Program covers the following areas: (1) Alternative Learning System, (2) Literacy Education, (3) Indigenous Peoples Education, (4) Islamic Education, (5) Multigrade Education, and (6) Special Needs and Inclusive Education. Each certificate comprises six specialized courses that are integrated into the undergraduate degree program (Annex G). The inclusion of a certificate is intended to enrich the undergraduate degree by providing complementary knowledge and skills that equip pre-service teachers with more comprehensive, well-rounded qualifications. Offering the certificate program should respond to contextual needs and conform to existing CHED requirements for human and physical resources,

including libraries as determined in Article VI Sections 14, 15, and 16.

5.1 BCTEd Program Framework



The framework acknowledges several key drivers that shape the *reframed* Bachelor of Career and Technical Education (BCTEd) curriculum. Central to this vision is the commitment to future-ready and globally aligned learning—ensuring that graduates are equipped with competencies relevant to both local and international contexts. It also emphasizes inclusive, values-driven, and lifelong formation, nurturing educators who uphold equity, integrity, and continuous personal and professional growth. Furthermore, the curriculum is anchored on technology-integrated and innovation-driven education, preparing teachers to leverage digital tools and adapt to emerging trends. Lastly, it promotes contextualized, experiential, and community-rooted learning, encouraging pedagogical approaches that are grounded in real-world applications and responsive to the unique needs of diverse communities.

5.2 Degree Name

The BCTEd degree program offers four (4) majorships, with respective concentrations, and shall be called:

1. Bachelor of Career and Technical Education Major in Industrial Arts with Concentration in:
 - Automotive Technology
 - Electronics Technology
 - Electrical Technology
 - Electromechanical Technology
 - Biomedical Technology
 - Machining Technology
 - Civil and Construction Technology

- Architectural Drafting Technology
 - Welding and Fabrication Technology
 - Heating, Ventilating, Air Conditioning, and Refrigeration Technology
 - Mechatronics Technology
2. Bachelor of Career and Technical Education Major in Family and Consumer Science with Concentration in:
- Food Service Management
 - Apparel Fashion and Design Technology
 - Hotel Operation and Tourism Services
 - Aesthetic, Health, and Wellness Services
3. Bachelor of Career and Technical Education Major in Information and Communications Technology with Concentration in:
- Animation
 - Visual Graphic Design
 - Computer and Web Programming
 - Computer Systems and Telecom Servicing
 - Digital Media Production and Content Creation
 - Contact Center Services
4. Bachelor of Career and Technical Education Major in Agri-Fishery Arts with Concentration in:
- Agricultural Production and Technology
 - Aquatic Production and Processing Technology
 - Sustainable Food Systems Technology

Certificate programs in Alternative Learning System, Literacy Education, Indigenous Peoples Education, Islamic Education, Multigrade Education, or Special Needs and Inclusive Education can be pursued as well as an optional additional six (6) courses integrated within the BCTEd programming.

5. Bachelor of Career and Technical Education Major in *[majorship]* with Concentration in *[concentration]* and with Certificate in:
- Alternative Learning System
 - Literacy Education
 - Indigenous Peoples Education
 - Islamic Education
 - Multigrade Education
 - Special Needs and Inclusive Education

Section 6. Program Outcomes

The minimum standards for the BCTEd program are expressed in the following set of learning outcomes:

6.1 Common to all programs in all types of institutions

The graduates have the ability to:

- a. articulate and discuss the latest developments in the specific field of practice. (PQF level 6 descriptor)
- b. effectively communicate in English and Filipino, both orally and in writing
- c. work effectively and collaboratively with a substantial degree of independence in multi-disciplinary and multi-cultural teams. (PQF level 6 descriptor)
- d. act in recognition of professional, social, and ethical responsibility
- e. preserve and promote "*Filipino historical and cultural heritage*" (based on RA 7722)

6.2 Common to the discipline (Teacher Education)

- a. Demonstrate depth and mastery of competencies in the area of specialization.
- b. Analyze contexts, considerations, and challenges that influence teaching and learning through the lenses of educational foundations and allied disciplines.
- c. Design innovative, inclusive, and adaptive learning spaces and experiences that connect theory and practice in 21st century teaching and learning.
- d. Employ technology-supported strategies that are innovative, appropriate, ethical, and sustainable towards inclusive learner experiences.
- e. Construct a variety of appropriate traditional and authentic assessments to enhance teaching and learning.
- f. Conduct research initiatives directed towards enhancing teaching and learning.
- g. Engage in continuous personal and professional development that foster community

involvement and lifelong learning.

- h. Cultivate teacher identity, agency, well-being, and resilience through meaningful connections, self-care practices, and strong commitment to the ethical standards of the profession.

6.3 Specific to the Bachelor of Career and Technical Education program

- a. Demonstrate depth and mastery of career and technical specialization and pedagogy aligned with national and global standards.
- b. Analyze educational, socio-cultural, and industrial contexts to address challenges in teaching and learning career and technical courses through interdisciplinary and values-driven perspectives.
- c. Design and implement innovative, inclusive, and adaptive learning spaces and experiences integrating theory, practice, and technology for 21st-century learners.
- d. Develop innovative and sustainable teaching-learning solutions that respond to rapid technological and societal changes.
- e. Engage in continuous personal and professional development that cultivates teacher identity, well-being, resilience, and socio-emotional competence in lifelong, community-rooted learning.

6.4 Common to graduates of a horizontal type of institution as defined in CMO 46, s. 2012

- a. Graduates of professional institutions demonstrate service orientation in their respective professions
- b. Graduates of colleges are qualified for various types of employment and participate in development activities and public discourses, particularly in response to the needs of the communities they serve
- c. Graduates of universities contribute to the generation of new knowledge by participating in various research and development projects

Moreover, all graduates of public and private higher education institutions must have the competencies to support national, regional, and local development plans. Furthermore, they may adopt mission-related program outcomes that are not included in the minimum set of learning outcomes.

Section 7. Performance Indicators for Bachelor of Career and Technical Education

BCTEd Program Outcomes	Performance Indicators
1. Demonstrate depth and mastery of career and technical specialization and pedagogy aligned with national and global standards.	1.1 Obtains national certifications from relevant specialization and concentration courses. 1.2 Acquires competencies as both educators and practitioners, responsive to industry needs. 1.3 Designs competency-based learning modules tailored to instructional and practical requirements. 1.4 Applies contextualized teaching strategies that address the diverse needs of learners.
2. Analyze educational, socio-cultural, and industrial contexts to address challenges in teaching and learning career and technical courses through interdisciplinary and values-driven perspectives.	2.1 Critically reflects on the foundations of education and related disciplines. 2.2 Analyzes workplace and community challenges affecting instructional design, delivery, and learner engagement. 2.3 Applies ethical, inclusive, and values-based teaching approaches. 2.4 Integrates indigenous and global knowledge systems in instruction. 2.5 Connects community-rooted programs with global sustainability goals.
3. Design and implement innovative, inclusive, and adaptive learning spaces and experiences integrating theory, practice, and technology for 21st-century learners.	3.1 Designs inclusive, student-centered activities aligned with 21st century learning principles. 3.2 Integrates emerging digital technologies to enhance teaching, learning, and assessment. 3.3 Creates project-based, experiential, and

- industry-linked learning environments
bridging theory with real-world and
community applications.
4. Develop innovative and sustainable teaching-learning solutions that respond to rapid technological and societal changes.
 - 4.1 Develops competency- and performance-based assessments aligned with national certification standards.
 - 4.2 Undertakes innovative projects to generate sustainable solutions that improve instruction and practice.
 - 4.3 Proposes entrepreneurial or livelihood ventures responsive to industry and community needs.
 5. Engage in continuous personal and professional development that cultivates teacher identity, well-being, resilience, and socio-emotional competence in lifelong, community-rooted learning.
 - 5.1 Participates in continuing professional development, industry immersion, and reflective practice.
 - 5.2 Demonstrates ethical behavior and professional accountability aligned with existing professional standards.
 - 5.3 Engages in community-based projects fostering collaborative growth and social responsibility.

ARTICLE V CURRICULUM

Section 8. Curriculum Components

The BCTEd program is composed of General Education Courses, Professional Education Courses, Core Courses, Major Courses, Concentration Courses, and Mandated Courses. Optional Certificate Program Courses are designed for pre-service teacher education programs.

A **Core Course** refers to a foundational subject that provides essential knowledge and skills across the four (4) domains of career and technical education (CTEd): Industrial Arts (IA), Family and Consumer Science (FCS), Information and Communications Technology (ICT), or Agri-Fishery Arts (AFA). These courses establish the theoretical and practical groundwork for teaching and training in CTEd through the four (4) *Fundamentals* courses, emphasizing technology integration (*Technology for Teaching and Learning in Career and Technical Courses*), entrepreneurship (*Career and Technical Workplace and Entrepreneurship*), alternative learning strategies (*Teaching in Alternative Learning Contexts*), and competency-based methodologies (*Competency-based Teaching and Training and Capstone Project*).

A **Major** refers to the designated field within the four (4) domains of CTEd that serves as the foundational disciplinary area upon which the curriculum is structured, pedagogical strategies are aligned, and professional competencies are developed. In taking the required **four (4) Major Courses** for the BCTEd program, institutions may design their own set of major courses as long as they meet the following conditions:

- maximum of 420 hours (i.e., total number of hours for all major courses must not exceed 420 hours; which means that major courses, at the *maximum*, are 3-unit lecture and 1-unit laboratory); and
- inclusion of the two (2) identified mandatory courses, as specified in the succeeding subsections.

A **Concentration** refers to a focused area of study that emphasizes a particular technology or applied skill set within the broader majorship. It represents the program's targeted effort to deepen pre-service teachers' competencies in a specific technology, methodology, or industry practice that aligns with labor market demands and institutional expertise. This will enable graduates of BCTEd to teach technology at the basic education level or at TESDA. In choosing the required **six (6) Concentration Courses** for the BCTEd program, institutions may design their own set of concentration courses, as long as they meet the following conditions:

- maximum of 700 hours (i.e., total number of hours for all concentration courses must not

exceed 700 hours; which means that concentration courses, at the *minimum*, are 3-unit lecture and 1-unit laboratory); and

- inclusion of highest available TESDA NC Qualification (i.e., the concentration must satisfy at least one highest available TESDA National Certificate that is relevant to the field of specialization).

8.1 Program Structure

The curriculum program structure indicates the minimum required courses and their corresponding units, as well as the total number of units per program component. Higher Education Institutions offering the BCTEd program may exercise flexibility in implementing the curriculum, as stipulated in Sections 4 and 11, and 12. Course descriptions are presented in the Annexes.

8.1.1 Bachelor of Career and Technical Education (BCTEd) Major in Industrial Arts

Courses	Units	Total _ units
A. General Education Courses (Annex E)		
B. Professional Education Courses (Annex A)		36 units
1. Human Growth and Development	3	
2. Foundations of Teaching and Learning	3	
3. Foundations of Special and Inclusive Education	3	
4. Theories and Approaches in Literacy Education	3	
5. Learner-Centered Teaching	3	
6. Learner Assessment	3	
7. The Teacher as a Person and as a Professional	3	
8. Principles and Practices of Homeroom Guidance	3	
9. Teaching Internship	12	
C. BCTEd Core Courses (Annex B)		27 units
1. Fundamentals of Industrial Arts	3	
2. Fundamentals of Family and Consumer Science	3	
3. Fundamentals of Information and Communications Technology	3	
4. Fundamentals of Agri-Fishery Arts	3	
5. Career and Technical Workplace and Entrepreneurship	3*	
6. Competency-based Teaching and Training (with emphasis on NTTC 1)	3	
7. Technology for Teaching and Learning in Career and Technical Courses (with emphasis on NTTC 2)	3*	
8. Teaching in Alternative Learning Contexts	3	
9. Capstone Project**	3*	

** combination of 2-unit
lecture and 1-unit laboratory*

*** course may be delivered
as Capstone project 1, a
2-unit lecture focusing on
project proposal; and
Capstone Project 2, a 1-unit
laboratory focusing on
output presentation*

D. Major Courses (Annex C)

16 units

- | | |
|--|---|
| 1. Carpentry (<i>mandatory</i>) | 4 |
| 2. Technical Drafting
(<i>mandatory</i>) | 4 |
| 3. Major Course 3 (<i>any
from the options below
or as designed by the
TEIs</i>) | 4 |
| 4. Major Course 4 (<i>any
from the options below
or as designed by the
TEIs</i>) | 4 |

Electrical Installation and Maintenance
Electronic Products Assembly and Servicing
Graphic Arts
Creative Handicrafts Design and Production
Shielded Metal Arc Welding
Plumbing
Masonry
Tile Setting
Automotive Servicing and Technology
Commercial Air-Conditioning Installation and Servicing
Construction Painting

**E. Concentration Courses
(Annex D)**

24 units

**E1. with Concentration in
Automotive Technology**

*(any 6 courses from the
options below or as
designed by TEIs)*

- Fundamentals of
Automotive Technology
with Basic Driving
- Car Care Servicing,
Emission Control, and
Tune-up
- Powertrain and
Transmission System
- Chassis and
Suspension Systems
- Automotive Electrical
and Electronics System
- Small Engine Repair
and Motorcycle

• Servicing Automotive HVAC Systems • Automotive Computer-Aided Design (CAD) • Engine Overhauling, Performance, and Testing • Emerging Automotive Technologies
E2. with Concentration in Electronics Technology <i>(any 6 courses from the options below or as designed by TEIs)</i> • Fundamentals of Electronics Technology • Electronic Circuits and Devices • Digital Electronics and Logic Circuits • Electronic Instruments and Measurements • Consumer Electronics • Computer Systems and Networking • Communication Electronics Systems • Audio-Video and Consumer Electronics Systems • Programmable Logic Controllers (PLC) and Industrial Automation • Smart Electronics and IoT Applications
E3. with Concentration in Electrical Technology <i>(any 6 courses from the options below or as designed by TEIs)</i> • Fundamentals of Electricity • Electrical Instruments and Measurements • Electrical and Electronics Circuits and Devices • Electrical Wiring System and Design • Solar PV Systems Installation, Service, and Design • Fire Detection and Alarm Systems • Electrical Machines and Controls • Electrical Power Generation, Transmission, and Distribution • Electrical Preventive Maintenance and Repair

• PLC System and Programming
E4. with Concentration in Electromechanical Technology <i>(any 6 courses from the options below or as designed by TEIs)</i> • Fundamentals of Electromechanics • Electromechanical Circuits and Control Devices • Mechanical Systems and Fabrication Technology • Electromechanical Sensors, Actuators, and Control • Electrical Machines and Drives • Hydraulics, Pneumatics, and Fluid Power Systems • Electrical Motor Control and Industrial Controls • Electromechanical PLC-Based Automation and Control Systems • Mechatronics Systems Integration • Smart Systems, Robotics, and IoT Applications
E5. with Concentration in Biomedical Technology <i>(any 6 courses from the options below or as designed by TEIs)</i> • Foundations of Biomedical Technology • Human Biology and Physics for Biomedical Systems • Electrical and Circuit Fundamentals • Digital Systems and Networking • Applied Electronics for Biomedical Systems • Signal Analysis and Processing • Instrumentation and Control Systems • Biomedical Instrumentation I • Biomedical Instrumentation II
E6. with Concentration in Machining Technology <i>(any 6 courses from the options below or as designed by TEIs)</i> • Metrology and Blueprint Reading • Machine Elements and

• Maintenance • Conventional Lathe and Cylindrical Grinding Operation • Conventional Milling and Surface Grinding Operations • Computer-Aided Design and Manufacturing • Advance Milling with Gear Cutting Operation • CNC Lathe Operation • CNC Milling Machine Operation • Tool and Die Design • Gas Tungsten Arc Welding (GTAW)
E7. with Concentration in Civil and Construction Technology <i>(any 6 courses from the options below or as designed by TEIs)</i> • Building Codes and Standards, Safety, and Health • Construction Materials, Testing, and Methods • Construction Painting and Finishing Works • Project Planning and Scheduling in Construction • Project Estimating and Costing in Construction • Plumbing and Pipefitting • Welding and Metal Works • Electrical Works for Construction • Masonry and Tile Setting • Woodworking
E8. with Concentration in Architectural Drafting Technology <i>(any 6 courses from the options below or as designed by TEIs)</i> • Fundamentals of Technical Drafting • Introduction to Architecture and Theory of Design • Mechanical Drawing and Furniture Designing • Space Programming and Creative Design • Integrated Architectural and Engineering Building Plans and Drafting • Building Materials and Construction Estimates • Advanced Architectural CAD Techniques: 2D

- and 3D • Advanced 3D Modeling (BIM with Revit) • Industrial Design I: Computer-Aided Design (CAD) • Industrial Design II: Advanced SolidWorks (CAD with 2D/3D Simulation)
E9. with Concentration in Welding and Fabrication Technology <i>(any 6 courses from the options below or as designed by TElS)</i> • Metrology and Blueprint Reading • Benchwork and Pipefitting • SMAW1: Weld Carbon and Alloy Steel Plates using Shielded Metal Arc Welding • SMAW2: Weld Carbon Steel Pipes using Shielded Metal Arc Welding • GTAW1: Weld Carbon Steel Plates and Pipes using Gas Tungsten Arc Welding • GTAW2: Weld Alloy Steel Plates and Pipes using Gas Tungsten Arc Welding • GMAW: Weld Alloy Steel Plate and Pipes using Gas Metal Arc Welding • FCAW: Weld Carbon Steel Plates using Flux-Cored Arc Welding • Sheet Metal Processing and Assembly • Jigs and Fixture Design using CAD
E10. with Concentration in Heating, Ventilating, Air Conditioning, and Refrigeration <i>(any 6 courses from the options below or as designed by TElS)</i> • Basic Electricity and Circuits (HVACR) • Fundamentals of Heating and Ventilation • Fundamentals of Refrigeration and Air Conditioning • HVACR for Domestic Application • HVACR Electrical Control Systems • Automobile/Mobile

Air-Conditioning System • Air Handling Units—Installation, Service, and Maintenance • HVACR for Commercial Application • Advanced HVACR Control Systems and Automation • HVACR for Marine and Industrial Application
E11. with Concentration in Mechatronics Technology <i>(any 6 courses from the options below or as designed by TEIs)</i> • Fundamentals of Mechatronics Systems • Sensors, Actuators, and Control Systems • Programmable Logic Controllers (PLC) and Automation • Industrial Robotics and Automation • Embedded Systems and Internet of Things • Hydraulics, Pneumatics, and Fluid Power Systems • Digital Twin and Simulation in Mechatronics • Sustainable and Green Mechatronics • Advanced Mechatronics System Integration

F. Mandated Courses (Annex F) **14 units**

PATHFIT 1-4 8
 NSTP 1 & 2 6

SUMMARY

A. General Education Courses	_ units
B. Professional Education Courses	36 units
C. Core Courses	27 units
D. Major Courses	16 units
E. Concentration Courses	24 units
F. Mandated Courses (PATHFIT and NSTP)	14 units
TOTAL	_ units

8.1.2 Bachelor of Career and Technical Education (BCTEd) Major in Family and Consumer Science

Courses	Units	Total
A. General Education Courses (Annex E)		_ units
B. Professional Education Courses (Annex A)		36 units
C. BCTEd Core Courses (Annex B)		27 units
D. Major Courses (Annex C)		16 units
1. Family Consumer and	4	

- | | |
|--|---|
| Resource Management
(mandatory) | |
| 2. Entrepreneurship and
Livelihood Development
(mandatory) | 4 |
| 3. Major Course 3 (any
from the options below
or as designed by the
TEIs) | 4 |
| 4. Major Course 4 (any
from the options below
or as designed by the
TEIs) | 4 |

Fundamentals of Garments and Clothing
Handicraft Production and Design
Personal Care and Aesthetic Services
Fundamentals of Bread and Pastry Production
Principles of Food Preparation
Food Safety and Product Packaging

**E. Concentration Courses
(Annex D)**

24 units

E1. with Concentration in Food Service Management (any 6 courses from the options below or as designed by TEIs) • Food Service Management • Meal Management • Bartending • Bread and Pastry Production • Food and Beverage Services • Cookery • Food Processing, Packaging and Labeling • Cafeteria and Catering Management
E2. with Concentration in Apparel Fashion and Design Technology (any 6 courses from the options below or as designed by TEIs) • Occupational Safety and Health Policies and Procedures • Pattern Design, Drafting, and Development • Fabric Science and Clothing Illustration • Industrial Sewing Machine Operation • Garments Designing

• and Fabric Manipulation • Garments Production • Textile and 3D Printing • Production Management in the Garments Industry
E3. with Concentration in Hotel Operation and Tourism Services <i>(any 6 courses from the options below or as designed by TEIs)</i> • Fundamentals of Hotel Operations and Tourism Services • Housekeeping • Front Office Services • Events Management Services • Local Guiding Services • Travel Services • Tourism Promotion Services • Tour Guiding Services • Tour Packaging (Fit Ad Hoc Domestic) Services
E4. with Concentration in Aesthetic, Health, and Wellness Services <i>(any 6 courses from the options below or as designed by TEIs)</i> • Fundamentals of Aesthetic, Health, and Wellness Services • Hairdressing and Barbering Services • Make Up and Skin Care Services • Nail Care Services • Healthcare Services • Wellness Massage and Spa Services • Aesthetic Services • Massage Therapy

F. Mandated Courses (Annex F)

14 units

PATHFIT 1-4

8

NSTP 1 & 2

6

SUMMARY

A. General Education Courses

_ units

B. Professional Education Courses

36 units

C. Core Courses

27 units

D. Major Courses

16 units

E. Concentration Courses

24 units

F. Mandated Courses (PATHFIT and NSTP)

14 units

TOTAL

_ units

8.1.3 Bachelor of Career and Technical Education (BCTEd) Major in Information and Communications Technology

Courses	Units	Total
A. General Education Courses (Annex E)		_ units
B. Professional Education Courses (Annex A)		36 units

C. BCTEd Core Courses (Annex B)		27 units
D. Major Courses (Annex C)		16 units
1. Computer Systems and Technical Support (<i>mandatory</i>)	4	
2. Computer Programming and Software Development (<i>mandatory</i>)	4	
3. Major Course 3 (<i>any from the options below or as designed by the TEIs</i>)	4	
4. Major Course 4 (<i>any from the options below or as designed by the TEIs</i>)	4	
Visual Communication and Graphic Design		
Digital Design and Animation		
Web Development and E-Commerce		
Computer Systems and Network Administration		
Digital Media Production		
Telecommunications and Broadband Technology		
Contact Center and Customer Experience Management		
Emerging and Immersive Technologies in Education		
E. Concentration Courses (Annex D)		24 units
E1. with Concentration in Animation (<i>any 6 courses from the options below or as designed by TEIs</i>) - Fundamentals of Animation Principles - Storyboarding and Visual Narratives 3D Modeling and Rendering - Character Design and Rigging - Motion Graphics and Special Effects - Advanced Animation Techniques (2D and 3D) - Game Animation Development - Animation for Emerging Technologies (AR/VR) - Animation Production and Project Management - Ethics and Sustainability in Animation		
E2. with Concentration in Visual Graphic Design (<i>any 6 courses from the options below or as designed by TEIs</i>) - Principles of Graphic Design and Branding - Typography and Layout Design - Digital Publishing and Print Media Production - Advanced Digital Illustration Techniques - Design for Social Media and Marketing Campaigns - Packaging and Product Design - Motion Design and Interactive Media - User Interface and User Experience (UI/UX) Design - Visual Design for AR/VR Experiences - Ethics and Intellectual Property in Graphic Design		
E3. with Concentration in Computer and Web Programming (<i>any 6 courses from the options below or as designed by TEIs</i>) - Fundamentals of Programming Logic and Algorithms - Object-Oriented Programming (OOP) - Web Application Development (Frontend and Backend) - Database Management and SQL Programming - Mobile App Development - Programming for Emerging Technologies - Cybersecurity and Secure Coding Practices - Software Testing and Quality Assurance - Full-Stack Development - Ethics and Sustainability in Software Development		
E4. with Concentration in Computer Systems and Telecom Servicing (<i>any 6 courses from the options below or as designed by TEIs</i>) - Fundamentals of Computer Systems and Hardware - Troubleshooting and Maintenance of Computer Systems - Network Design and Configuration - Telecommunications Systems and Broadband Technology - Wireless Communication and IoT Systems - Server Administration and Virtualization - Cybersecurity Essentials for Networks		

• Cloud Computing and Data Center Management • Telecom Infrastructure Design and Implementation • Ethics and Sustainability in Telecom and Systems Servicing		
E5. with Concentration in Digital Media Production and Content Creation (<i>any 6 courses from the options below or as designed by TEIs</i>) • Fundamentals of Digital Media Production • Photography and Image Editing • Storytelling and Scriptwriting for Media • Audio Production and Podcasting • Video Production and Editing Techniques • Social Media Content Creation and Management • Live Streaming and Event Production • Media Production for AR/VR Platforms • Multimedia Project Management and Collaboration • Ethics and Copyright in Digital Media Production		
E6. with Concentration in Contact Center Services (<i>any 6 courses from the options below or as designed by TEIs</i>) • Fundamentals of Contact Center Operations • Customer Service Communication Skills • Ethics and Professionalism in Customer Service • Business Process Outsourcing (BPO) Industry Standards • Contact Center Technologies and Tools • Managing Multichannel Customer Interactions • Troubleshooting and Problem Resolution Skills • Data Analytics for Customer Experience Management • Workforce Management and Quality Assurance in Contact Centers • AI and Automation in Contact Center Services		
F. Mandated Courses (Annex F)		14 units
PATHFIT 1-4	8	
NSTP 1 & 2	6	
SUMMARY		
A. General Education Courses		_ units
B. Professional Education Courses		36 units
C. Core Courses		27 units
D. Major Courses		16 units
E. Concentration Courses		24 units
F. Mandated Courses (PATHFIT and NSTP)		14 units
TOTAL		_ units

8.1.4 Bachelor of Career and Technical Education (BCTEd) Major in Agri-Fishery Arts

Courses	Units	Total
A. General Education Courses (Annex E)		_ units
B. Professional Education Courses (Annex A)		36 units
C. BCTEd Core Courses (Annex B)		27 units
D. Major Courses (Annex C)		16 units
1. Soil Fertility and Management (<i>mandatory</i>)	4	
2. Principles of Livestock and Aquaculture (<i>mandatory</i>)	4	
3. Major Course 3 (<i>any from the options below or as designed by the TEIs</i>)	4	
4. Major Course 4 (<i>any from the options below or as designed by the TEIs</i>)	4	
Agricultural Crops Production		
Sustainable Food Systems Technology		
Food Processing		
Pest Management and Crop Protection		
Organic Agriculture		
Fundamentals of Aquaculture		
E. Concentration Courses (Annex D)		24 units
E1. with Concentration in Agricultural Production and		

Technology (any 6 courses from the options below or as designed by TEIs) • Animal Production (Poultry and Swine) • Animal Production (Large and Small Ruminants) • Horticultural Crop Production • Postharvest Technology and Management • Agroentrepreneurship • Pressurized Irrigation System Installation and Maintenance • Applied Rice Mechanization and Engine System • Climate Smart and Digital Farming System		
E2. with Concentration in Aquatic Production and Processing Technology (any 6 courses from the options below or as designed by TEIs) • Aquaculture Operations • Fish Products Packaging • Fish Processing and Preservation • Hatchery Management • Aquatic Animal Health Management • Fishery Equipment Repair and Maintenance • Postharvest Handling of Aquatic Resource Management • Aquatic Farm Business and Enterprise • Sustainable Aquatic Resource Management		
E3. with Concentration in Sustainable Food Systems Technology (any 6 courses from the options below or as designed by TEIs) • Sustainable Food Systems Policy and Governance • Food Processing and Preservation • Agroentrepreneurship and Farm Business Management • Aquaculture and Aquatic Resource Management • Postharvest Handling and Food Preservation Technology • Food Safety and Quality Assurance • Sustainable Packaging and Labeling • Food Product Development • Sustainable Livestock Production		
F. Mandated Courses (Annex F)		14 units
PATHFIT 1-4	8	
NSTP 1 & 2	6	
SUMMARY		
A. General Education Courses		_ units
B. Professional Education Courses		36 units
C. Core Courses		27 units
D. Major Courses		16 units
E. Concentration Courses		24 units
F. Mandated Courses (PATHFIT and NSTP)		14 units
TOTAL		units

8.1.5 Bachelor of Career and Technical Education (BCTEd) with Certificate

Courses	Units	Total
A. General Education Courses (Annex E)		_ units
B. Professional Education Courses (Annex A)		36 units
C. BCTEd Core Courses (Annex B)		27 units
D. Major Courses (Annex C)		16 units
E. Concentration Courses (Annex D)		24 units
F. Certificate Program Courses (See Annexes for the List of courses per Certificate Program) • Alternative Learning System (Annex G.1); • Literacy Education (Annex G.2); • Indigenous Peoples Education (Annex G.3); • Islamic Education (Annex G.4); • Multigrade Education (Annex G.5); or • Special Needs and Inclusive Education (Annex G.6)		18 units

G. Mandated Courses (Annex F)		14 units
PATHFIT 1-4	8	
NSTP 1 & 2	6	
SUMMARY		
A. General Education Courses		_ units
B. Professional Education Courses		36 units
C. Core Courses		27 units
D. Major Courses		16 units
E. Concentration Courses		24 units
F. Certificate Program Courses		18 units
G. Mandated Courses (PATHFIT and NSTP)		14 units
TOTAL		_ units

8.2 Program of Study

Courses must be offered based on faculty and resource availability. All General Education courses must be completed before the Teaching Internship. It must also be ensured that sequential subjects are scheduled accordingly. For example, in the Professional Education Courses, *Foundations of Teaching and Learning* must come before *Learner-Centered Teaching*.

Further, the 'Fundamentals' core course aligned with the pre-service teachers' major should precede the other *Fundamentals* courses. In the sample programming in this section, the presumed major is Industrial Arts; hence, the offering of *Fundamentals of Industrial Arts* in Year 1 Semester 1. *Fundamentals of Information and Communications Technology* shall likewise be offered early in the course programming, regardless of the major, as competencies to be developed in this course are necessary in progressing to the core, major, and concentration courses.

The sample course programming presented in this section covers 3.5 years for the BCTEd program and 4 years for the BCTEd program with Certificate.

8.2.1 Bachelor of Career and Technical Education

FIRST YEAR			
1st Semester	Units	2nd Semester	Units
Professional Education 1 (Human Growth and Development)	3	Professional Education 3 (Foundations of Special and Inclusive Education)	3
Professional Education 2 (Foundations of Teaching and Learning)	3	Professional Education 4 (Theories and Approaches in Literacy Education)	3
Core Course 1 (Fundamentals of Industrial Arts)	3	Major Course 2 in IA/FCS/ICT/AFA (<i>mandatory</i>)	4
Core Course 3 (Fundamentals of Information and Communications Technology)	3	Major Course 3 in IA/FCS/ICT/AFA	4

Major Course 1 in IA/FCS/ICT/AFA (<i>mandatory</i>)	4	PATHFIT 2	(2)
PATHFIT 1	(2)	NSTP 2	(3)
NSTP 1	(3)		
TOTAL	16	TOTAL	14

SECOND YEAR			
1st Semester	Units	2nd Semester	Units
Professional Education 5 (Learner-Centered Teaching)	3	Professional Education 7 (The Teacher as a Person and as a Professional)	3
Professional Education 6 (Learner Assessment)	3	Professional Education 8 (Principles and Practices of Homeroom Guidance)	3
Core Course 2 (Fundamentals of Family and Consumer Science)	3	Major Course 4 in IA/FCS/ICT/AFA	4
Core Course 6 (Competency-based Teaching and Training [with emphasis on NTTC 1])	3	Core Course 7 (Technology for Teaching and Learning in Career and Technical Courses [with emphasis on NTTC 2])	3
Concentration Course 1 in IA/FCS/ICT/AFA	4	Core Course 9.1 (Capstone Project 1)	2
Concentration Course 2 in IA/FCS/ICT/AFA	4	Concentration Course 3 in IA/FCS/ICT/AFA	4
PATHFIT 3	(2)	PATHFIT 4	(2)
TOTAL	20	TOTAL	19

THIRD YEAR			
1 st Semester	Units	2 nd Semester	Units
Core Course 4 (Fundamentals of Agri-Fishery Arts)	3	Teaching Internship 1	6
Core Course 5 (Career and Technical Workplace and Entrepreneurship)	3		
Core Course 8 (Teaching in Alternative Learning Context)	3		
Core Course 9.2 (Capstone Project 2)	1		
Concentration Course 4 in IA/FCS/ICT/AFA	4		
Concentration Course 5 in IA/FCS/ICT/AFA	4		
Concentration Course 6 in IA/FCS/ICT/AFA	4		
TOTAL	22	TOTAL	6

FOURTH YEAR	
1 st Semester	Units
Teaching Internship 2	6
TOTAL	6

8.2.2 Bachelor of Career and Technical Education with Certificate (in ALS, Literacy Ed, IPed, Islamic Ed, Multigrade Ed, or SNEd)

FIRST YEAR			
1 st Semester	Units	2 nd Semester	Units
Professional Education 1 (Human Growth and Development)	3	Professional Education 3 (Foundations of Special and Inclusive Education)	3
Professional Education 2 (Foundations of Teaching and Learning)	3	Professional Education 4 (Theories and Approaches in Literacy Education)	3
Core Course 1 (Fundamentals of Industrial Arts)	3	Core Course 2 (Fundamentals of Family and Consumer Science)	3
Core Course 3 (Fundamentals of Information and Communications Technology)	3	Core Course 4 (Fundamentals of Agri-Fishery Arts)	3
Major Course 1 in IA/FCS/ICT/AFA (<i>mandatory</i>)	4	Major Course 2 in IA/FCS/ICT/AFA (<i>mandatory</i>)	4
PATHFIT 1	(2)	PATHFIT 2	(2)
NSTP 1	(3)	NSTP 2	(3)
TOTAL	16	TOTAL	16

SECOND YEAR			
1 st Semester	Units	2 nd Semester	Units
Professional Education 5 (Learner-Centered Teaching)	3	Professional Education 7 (The Teacher as a Person and as a Professional)	3
Professional Education 6 (Learner Assessment)	3	Professional Education 8 (Principles and Practices of Homeroom Guidance)	3
Major Course 3 in IA/FCS/ICT/AFA	4	Major Course 4 in IA/FCS/ICT/AFA	4

Concentration Course 1 in IA/FCS/ICT/AFA	4	Concentration Course 2 in IA/FCS/ICT/AFA	4
Certificate Course 1	3	Core Course 6 (Competency-based Teaching and Training [with emphasis on NTTC 1])	3
Certificate Course 2	3	Certificate Course 2	3
PATHFIT 3	(2)	PATHFIT 4	(2)
TOTAL	20	TOTAL	20

THIRD YEAR			
1 st Semester	Units	2 nd Semester	Units
Core Course 7 (Technology for Teaching and Learning in Career and Technical Courses [with emphasis on NTTC 2])	3	Core Course 5 (Career and Technical Workplace and Entrepreneurship)	3
Core Course 9.1 (Capstone Project 1)	2	Core Course 8 (Teaching in Alternative Learning Context)	3
Concentration Course 3 in IA/FCS/ICT/AFA	4	Core Course 9.2 (Capstone Project 2)	1
Concentration Course 4 in IA/FCS/ICT/AFA	4	Concentration Course 5 in IA/FCS/ICT/AFA	4
Certificate Course 4	3	Concentration Course 6 in IA/FCS/ICT/AFA	4
Certificate Course 5	3	Certificate Course 6	3
TOTAL	19	TOTAL	18

FOURTH YEAR			
1 st Semester	Units	2 nd Semester	Units
Teaching Internship 1	6	Teaching Internship 2	6
TOTAL	6	TOTAL	6

Section 9. Sample Curriculum Map

The mapping of courses to the program outcomes is guided by development levels. The scale provides descriptions of the degree to which a program outcome is addressed by a particular course. The descriptions are informed by curriculum mapping guides used by higher education institutions and adapted to the context of teacher education. The mapping can be reviewed and modified to align with the regional and institutional contexts and expectations.

Legend:

I – Introduced. Pre-service teachers (PSTs) are introduced to the foundational knowledge and skills.

P – Practiced. PSTs apply knowledge and reinforce abilities through practice.

D – Demonstrated. PSTs demonstrate understanding and application of knowledge and skills in different contexts.

PROFESSIONAL EDUCATION COURSES	TEACHER EDUCATION PROGRAM OUTCOMES							
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
1. Human Growth and Development		I	I			I		
2. Foundations of Teaching and Learning	I	I	I			I		

3. Foundations of Special and Inclusive Education		P	D	I			I	
4. Theories and Approaches in Literacy Education	I		I	P	I			
5. Learner- Centered Teaching	P		P	P	P			I
6. Learner Assessment	I			P	P	P		
7. The Teacher as a Person and as a Professional		P					P	D
8. Principles and Practices of Homeroom Guidance	I	P					P	P
9. Teaching Internship	P	P	D	D	D	D	D	D

BCTEd CORE COURSES	BCTEd PROGRAM OUTCOMES				
	PO 1	PO 2	PO3	PO 4	PO5
1. Fundamentals of Industrial Arts	I	I	I		
2. Fundamentals of Family and Consumer Science	I	I	I		
3. Fundamentals of Information and Communications Technology	I	I	I		
4. Fundamentals of Agri-Fishery Arts	I	I	I		
5. Career and Technical Workplace and Entrepreneurship	P	P	I	I	P
6. Competency-based Teaching and Training (with emphasis on NTTC 1)	P		P	P	
7. Technology for Teaching and Learning Career and Technical Courses (with emphasis on NTTC 2)	P	I	D	D	I
8. Teaching in Alternative Learning Contexts	P	D	D	D	P
9. Capstone Project	D	D	D	D	D
BCTEd MAJOR COURSES	BCTEd PROGRAM OUTCOMES				
	PO 1	PO 2	PO3	PO 4	PO5
10. Major Course 1	D	I	I	I	P
11. Major Course 2	D	I	I	I	P
12. Major Course 3	D	I	I	I	P
13. Major Course 4	D	I	I	I	P
BCTEd CONCENTRATION COURSES	BCTEd PROGRAM OUTCOMES				
	PO 1	PO 2	PO3	PO 4	PO5
14. Concentration Course 1	D	I	P	P	P
15. Concentration Course 2	D	I	P	P	P
16. Concentration Course 3	D	I	P	P	P
17. Concentration Course 4	D	I	P	P	P
18. Concentration Course 5	D	I	P	P	P
19. Concentration Course 6	D	I	P	P	P

Section 10. Learning Delivery

The *Reframed* Pre-service Teacher Education Curriculum advances interdisciplinary and integrative approaches that emphasize deep understanding of disciplinary content and its contextualized application to address contemporary educational concerns. The curriculum promotes transformative pedagogies grounded in developmentally appropriate, evidence-based, and inclusive practices. Innovative pedagogical frameworks are explored, with deliberate integration of technology and enhancement of research proficiency. Moreover, the rigorous development of content knowledge is complemented by purposeful experiential learning, enabling pre-service teachers to cultivate adaptive strategies responsive to the diverse needs of learners and varied learning environments. Ultimately, the curriculum seeks to nurture values-driven and culturally responsive educators committed to advancing national aspirations.

Teacher education institutions are afforded flexibility in learning delivery. To support curriculum operationalization, Syllabus Guides are provided as references for unpacking learning outcomes through suggested content, teaching and learning activities, and assessment methods. The Compendium of Syllabus Guides for the courses in the BCTEd program is accessible through a repository provided in Section 12.

Section 11. Curriculum Implementation

The *Reframed* Pre-service Teacher Education Curriculum promotes flexibility and context-responsive operationalization of curriculum expectations. Innovation is advocated through various forms of support and quality assurance mechanisms to be established by CHED and TEC. This approach shall empower Teacher Education Institutions (TEIs) to exercise agency by being afforded increased flexibility in crafting curriculum implementation strategies.

Institutions that model and document their innovations shall be prioritized for incentives, grants, and other supports from CHED and TEC. TEIs shall also be supported by CHED and TEC in moving towards models that offer greater flexibility. Streamlined monitoring and quality assurance systems shall be established to support the curriculum implementation.

The implementation of the curriculum shall commence in the pilot phase in SY 2026-2027, involving selected TEIs representing different institutional types across the regions. The pilot implementation aims to collect data to identify curriculum effectiveness and potential gaps. The pilot will also serve as the curriculum diffusion stage, focused on information dissemination and capacity building for TEIs and other education stakeholders.

The flexible implementation is framed by models that advance curriculum **innovation**, **contextualization**, and **adoption**. The flexibilities are in reference to the minimum requirements set by this PSG. These models are characterized by specific areas of flexibility based on the different curriculum program standards: *Program Outcomes*, *Program Components*, *Program Structure*, *Program Design and Delivery*, and *Program Evaluation*.

Program Outcomes refer to the minimum expectations that pre-service teachers must demonstrate based on the program, discipline, and institution from which they graduated. The eight (8) Teacher Education Program Outcomes and the specific degree-program outcomes, as indicated in Sections 6 and 7, are **minimum requirements** that apply to all TEIs offering the BCTEd program. TEIs can include context-driven and mission-oriented outcomes as indicated in Section 4.

Program Components are the areas into which pre-service teacher education courses are categorized. These are *General Education*, *Professional Education*, and *Specialization*. These components are also **minimum requirements**, but the operationalization of their structure, delivery, and evaluation is an area for flexibility. Specific degree programs also provide pathways with Concentrations and/or Certificate Programs. Offering of these components must be supported by TEI faculty expertise and resources.

TEIs are allowed to implement different delivery routes to achieve the required minimum set of outcomes as indicated in Section 4. Specific areas of flexibility can be explored within Program Structure (as stated in Section 8.1), Design and Delivery, and Evaluation. *Program Structure* refers to the courses and their corresponding units, as well as the total number of units per *Program Component*. *Program Design and Delivery* is the systematic planning and implementation of the curriculum to meet the specified program outcomes, while *Program Evaluation* involves the collection and analysis of relevant data to assess the demonstration of those outcomes. More specific flexibilities and institutional qualifications are described in the flexible implementation models below:

11.1 Curriculum Innovation Model

Curriculum innovation involves developing, modeling, and documenting new designs, processes, and methodologies to transform educational systems. TEIs that can implement the *Curriculum Innovation Model* must be a TEC National or Regional Centers of Excellence (COEs), or a CHED Excellence in Quality Assurance in Teacher Education (EQUATE) Dual Awardee. In this model, TEIs shall adopt the Professional Education courses. Specialization courses that develop pedagogical content knowledge shall also be adopted. These courses are those that focus on teaching methodology, curriculum, assessment, technology for teaching and learning, research, and literacy. As such, the model recognizes the TEI's readiness to adapt the curriculum with greater flexibility while remaining aligned with established standards and intended learning outcomes.

Areas for flexible implementation may include:

- designing data-driven experiential learning and teaching internship models that respond to the pressing and emerging needs of the TEI context in regional and/or national scope;
- modifying courses in the minimum requirement based on contextual demands in the region and/or the discipline area; and
- implementing program delivery strategies through consortium arrangement, Open Distance and e-Learning, microcredentials, extension classes, and internationalization based on faculty qualifications and infrastructure resource capabilities; and
- modeling continuous curriculum quality improvement mechanisms, including but not limited to curriculum quality audit, institutional outcomes assessment, and program-level evaluation.

11.2 Curriculum Contextualization Model

Curriculum contextualization prompts targeted, customized implementation driven by situated, localized needs and challenges. TEIs that can implement the *Curriculum Contextualization Model* must have at least Level II Program Accreditation, be a CHED EQUATE Awardee in at least 1 program, or be compliant with specific indicators in the TEC *Self-Assessment Report*. In this model, TEIs shall adopt the Professional Education courses. Specialization courses that develop pedagogical content knowledge shall also be adopted. These courses are those that focus on teaching methodology, curriculum, assessment, technology for teaching and learning, research, and literacy. TEIs must have the capacity to design, deliver, and assess courses in ways that respond to their unique needs, local conditions, and institutional contexts.

Areas for flexible implementation may include:

- designing data-driven experiential learning and teaching internship models that respond to the pressing and emerging needs of the TEI context in regional scope;
- modifying specialization courses in the minimum requirement based on contextual demands in the region;
- implementing program delivery strategies through consortium arrangement, Open Distance and e-Learning, microcredentials, extension classes, and internationalization based on faculty qualifications and infrastructure resource capabilities; and
- modeling continuous curriculum quality improvement mechanisms, including but not limited to curriculum quality audit, institutional outcomes assessment, and program-level evaluation.

11.3 Curriculum Adoption Model

Curriculum adoption involves comprehensive planning and implementation in delivering the minimum requirements of the curriculum expectations and design. The *Curriculum Adoption Model* applies to all other TEIs. In this model, TEIs shall adopt all courses prescribed by the *reframed* pre-service teacher education curriculum.

Areas for flexible implementation may include:

- integrating experiential learning across the ProfEd and Specialization courses;
- implementing a Teaching Internship model designed by TEC and CHED;
- delivering the program in a consortium arrangement in collaboration with other TEIs;
- offering selected courses through Open Distance and e-Learning in partnership with

other TEIs and based on faculty qualifications and infrastructure resource capabilities;
and

- adapting continuous curriculum quality improvement mechanisms as prescribed by TEC and CHED.

All TEIs will be supported to progressively transition from the Curriculum Adoption Model to the Curriculum Contextualization Model.

Section 12. Sample Syllabus Guides (Annex I)

A ***Compendium of Syllabus Guides*** for all courses is provided to support curriculum unpacking by outlining the constructive alignment among course learning outcomes, assessments, and content. Recommendations and suggestions on topics, assessment, activities, and resources serve as a reference in operationalizing the curriculum and designing the course delivery. The issuance of Syllabus Guides should not prevent TEIs from making modifications in light of their institutional vision, mission, goals, and philosophy.

The Syllabus Guides will be released progressively in line with the proposed course programming. They shall be accessible through the following online repository platforms:

TEC Website: <https://tec.gov.ph/>

TEC Repository: 



Inquiries and clarifications on the curriculum may be directed to the following communication channels:

TEC Email: teccurriculum.support@gmail.com

CHED Email:

ARTICLE VI REQUIRED RESOURCES

Section 13. Administration Dean/Department Head/[Program Head](#)

The Dean/Department Head/[Program Head](#) of the college offering the degree shall be employed full-time and must possess the following qualifications:

1. Filipino citizen
2. Holder of a Doctorate degree in Education or a related field
3. Holder of a Certificate of Registration and Professional Identification Card for Professional Teachers
4. With a total of at least three (3) years of very satisfactory teaching experience
5. Preferably with at least two (2) years of managerial/administrative experience.

Section 14. Faculty

A. General Requirements

1. As a general rule, a master's degree in education or in an aligned or allied discipline is required for teaching at the tertiary level.
2. Faculty members teaching general education, mandated, and core courses should have an appropriate master's degree in the field they are assigned to teach.
3. Have at least one (1) year of very satisfactory teaching experience in any technical-vocational or technological institution.

B. Qualifications of the Professional Education Faculty

1. Holder of a Certificate of Registration and Professional Identification Card for Professional Teachers.
2. Holder of a Master's degree in Education or in an aligned or allied [discipline](#).

C. Qualifications of [Specialization Courses Faculty](#)

1. Holder of [career-technical masters degree \(e.g., Masters Degree in Technology Education\) or aligned or allied discipline](#).
2. Holder of a Certificate of Registration and Professional Identification Card for Professional Teachers.
3. Must be compliant with the training regulations of TESDA ([i.e. NC, NTTC](#))
4. [Holder of a related certification in the qualification they are assigned to teach.](#)

D. Full-time faculty members of the college

The institution shall maintain 25% of the faculty members teaching in the teacher education program as full-time.

E. Faculty Development

The College of Education must have a system to support faculty development anchored on the institution's faculty development program. It should require the faculty members to:

1. complete doctoral degrees in education and other aligned or allied fields; attend continuing education seminars, workshops, conferences, and others;
2. undertake research activities related to the teacher education program and publish their research outputs in refereed publications; and
3. give lectures and present papers in national/international conferences, symposia, and seminars.

Section 15. Library

Library personnel, facilities, and holdings should conform to existing CHED requirements for libraries, as embodied in CMO No. 22, series of 2021 – Minimum Requirements for Libraries of Higher Education Institutions Common to All Programs. The library must maintain a collection of updated, appropriate textbooks and references for the core courses in the curriculum. Library resources should complement curriculum delivery to optimize achievement of the BCTEd program outcomes.

Section 16. Laboratory, Shopwork, and Other Facilities

A. General Requirements

In addition to the standard laboratories and facilities for general education, the Teacher Education Institution (TEI) shall ensure the provision of specialized infrastructure and learning environments necessary for the effective delivery of the Bachelor of Career and Technical Education (BCTEd) program.

1. A dedicated laboratory for career and technical education courses shall be established and maintained either within the campus or through formalized partnerships, linkages, or consortia with external institutions and industry partners.
2. For each area of specialization (majorship), the TEI shall provide and sustain specialized laboratories and shopwork facilities that conform to the standards set by the Technical Education and Skills Development Authority (TESDA), ensuring authenticity of training and alignment with industry practices.

A. Educational Technology Laboratory

1. The TEI shall have a fully equipped educational technology laboratory that supports the integration of digital tools and media in teaching and learning. This facility must be furnished with appropriate hardware, software, and instructional resources as specified in the course requirements.
2. It shall serve as a venue for the development, presentation, and evaluation of audio-visual and multimedia instructional materials, thereby enhancing pedagogical innovation and supporting technology-enabled instruction.

B. Laboratory School or Cooperating Schools

1. The TEI shall maintain functional partnerships with cooperating schools to facilitate field study and practice teaching. Preferably, this may be realized through a laboratory school operated by the TEI; however, in its absence, the institution must establish long-term Memoranda of Agreement with schools under the Department of Education or with a network of cooperating schools where students can undertake professional education courses and teaching internships.
2. Furthermore, immersion and student internship programs aligned with specific areas of specialization shall be conducted in legitimate and registered industry partners, such as food service establishments (e.g., bakeshops), business process outsourcing companies (e.g., call centers), technical workshops (e.g., welding shops), and agricultural enterprises (e.g., farms). These industry engagements are essential to ensure that students acquire authentic workplace experiences, thereby strengthening the alignment between academic preparation and industry competencies.

Section 17. Admission and Retention Policy

The basic requirement for eligibility for admission of a student to the Teacher Education program shall be graduates from a Senior High School level recognized by the Department of Education.

TEIs must have a selective admission policy in place for Teacher Education programs. This policy shall include passing an admission examination. For this purpose, TEIs may use either of the following admission examinations:

1. an admission examination developed and validated by the TEI;
2. an admission examination developed and validated by another TEI and used by TEI under a consortium agreement;
3. an admission examination developed and validated by private testing centers and used by TEI for a fee;
4. some other standardized tests for teaching aptitude; or
5. some other national qualifications examinations may be developed in the future.

ARTICLE VII COMPLIANCE OF HEIs

Using the **CHED Implementation Handbook for OBE and ISA** as a reference, an HEI shall develop the following items, which will be submitted to CHED when they apply for a permit for a new program:

Section 18. The complete set of program outcomes, including its proposed additional program outcomes.

Section 19. Its proposed curriculum and its justification, including a curriculum map.

Section 20. Proposed performance indicators for each outcome. Proposed measurement system for the level of attainment of each indicator.

Section 21. Proposed outcomes-based syllabus for each course.

Section 22. Proposed system of program assessment and evaluation

Section 23. Proposed system of program Continuous Quality Improvement (CQI).

For existing programs, CHED shall conduct regular monitoring and evaluation of HEIs' compliance with these Policies, Standards, and Guidelines using an outcomes-based assessment instrument.

ARTICLE VIII TRANSITORY, REPEALING, AND EFFECTIVITY PROVISIONS

Section 24. Transitory Provision

All private HEIs, State Universities and Colleges (SUCs), and Local Universities and Colleges (LUCs) with existing authorization to operate the **Bachelor of Technical and Livelihood Education (BTLEd)** and **Bachelor of Technical-Vocational Teacher Education (BTVTEd)** programs are hereby given a period of three (3) years from the effectivity thereof to fully comply with all the requirements in this CMO. The prescribed minimum curricular requirements in this CMO shall be implemented starting SY 2027-2028, following the pilot implementation of selected TEIs in SY 2026-2027.

Section 25. Sanctions

For violation of this Order, the Commission may impose such administrative sanction as it may deem appropriate pursuant to the pertinent provisions of Republic Act No. 7722, in relation to Section 69 of BP 232 otherwise known as the Higher Education Act of 1982, and the Manual of Regulations for Private Higher Education (MORPHE) per CMO No. 40, series of 2008 and other related laws.

Section 26. Repealing Clause

Any provision of this Order, which may thereafter be held invalid, shall not affect the remaining provisions.

All CHED issuances or parts thereof inconsistent with the provisions in this CMO shall be deemed modified or repealed.

Section 27. Effectivity Clause

This Order shall take effect after its publication in the Official Gazette or Newspaper of General Circulation.

Quezon City, Philippines, _____

SHIRLEY C. AGRUPIS, Ph.D.
Chairperson

Attachments:

Annex A – Description of Professional Education Courses

Annex B – Description of BCTEd Core Courses

Annex C – Description of BCTEd Major Courses

C.1 Industrial Arts

C.2 Family and Consumer Science

C.3. Information and Communications Technology

C.4. Agri-Fishery Arts

Annex D - Description of BCTEd Concentration Courses in

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D.1.2 Electronics Technology

D.1.3 Electrical Technology

D.1.4 Electromechanical Technology

D.1.5 Biomedical Technology

D.1.6 Machining Technology

D.1.7 Civil and Construction Technology

D.1.8 Architectural Drafting Technology

D.1.9 Welding and Fabrication Technology

D.1.10 Heating, Ventilating, Air Conditioning, and Refrigeration Technology

D.1.11 Mechatronics Technology

D.2 Family and Consumer Science

D.2.1 Food Service Management

D.2.2 Apparel Fashion and Design Technology

D.2.3 Hotel Operation and Tourism Services

D.2.4 Aesthetic, Health, and Wellness Services

D.3. Information and Communications Technology

D.3.1 Animation

D.3.2 Visual Graphic Design

D.3.3 Computer and Web Programming

D.3.4 Computer Systems and Telecom Servicing

D.3.5 Digital Media Production and Content Creation

D.3.6 Contact Center Services

D.4. Agri-Fishery Arts

D.4.1 Agricultural Production and Technology

D.4.2 Aquatic Production and Processing Technology

D.4.3 Sustainable Food Systems Technology

Annex E – Description of General Education Course Themes (% CHED)

Annex F - Description of Mandated Courses (% CHED)

Annex G – Undergraduate Certificate Program Courses

G.1 Alternative Learning System

G.2 Literacy Education

G.3 Indigenous Peoples Education

G.4 Islamic Education

G.5 Multigrade Education

G.6 Special Needs and Inclusive Education

Annex H – ICT Competency Standards for Teachers (% CHED)

Annex I – Sample Syllabus Guide and Link to Repository of Syllabus Guides Compendium

Annex A
Description of Professional Education Courses

Course Title	Human Growth and Development
Course Credits	3 units
Contact Hours	51-54 hours
Prerequisite/s	
Description	This course prepares pre-service teachers to understand and support learners across all developmental stages by examining physical, cognitive, emotional, and social development from infancy through adulthood, and translating this understanding into supportive and inclusive learning designs. The course emphasizes analyzing development through major theories and allied foundations of teaching and learning, and designing responsive learning experiences that connect theory to classroom realities and learner diversity. Pre-service teachers examine the foundations of and physical growth patterns, cognitive development and brain-based learning, socio-emotional and moral development, and humanistic and ecological perspectives, including Filipino contexts. Learning experiences include theory-informed discussions, analysis papers, and developmental timelines, along with workshops and observations/fieldwork that focus on developmental stage, needs, and contextual factors. At the end of the course, pre-service teachers create supportive and inclusive learning plans that meet the needs of diverse learners at various ages, using developmentally appropriate, inclusive learning experiences aligned to curriculum expectations and explained through Science of Learning principles.

Course Title	Foundations of Teaching and Learning
Course Credits	3 units
Contact Hours	51-54 hours
Prerequisite/s	
Description	This course provides pre-service teachers with an interdisciplinary foundation by engaging philosophical, historical, legal, socio-cultural, psychological, and inclusive perspectives, enabling them to critically reflect on their roles as educators in diverse and evolving learning environments. It enables them to explore foundational education philosophies, examine key legal and policy frameworks, and investigate cultural, psychological, sociological, and anthropological dimensions of teaching and learning to understand how these elements collectively inform inclusive and contextually responsive classroom practices. PSTs will engage in readings, discussions, and case analyses that connect educational foundations to classroom realities, allowing them to investigate how values, beliefs, systems, and learner contexts influence teaching practice. Through reflective writing, school culture audit, legal scenario analysis, and community-based inquiries, they will articulate their evolving perspectives on education. At the end of the course, the PSTs will create evidence-informed activities and strategies to improve a classroom situation, demonstrating inclusive and contextually responsive teaching.

Course Title	Foundations of Special and Inclusive Education
Course Credits	3 units
Contact Hours	51-54 hours
Prerequisite/s	
Description	This course prepares pre-service teachers to understand and support learners of all backgrounds and abilities by building a practical grasp of inclusive education's historical, legal, and theoretical foundations and how disability, language, and socioeconomic realities intersect to shape learning needs. It helps them develop the knowledge, skills, and values needed to adapt lessons, create inclusive classrooms, and respond effectively to each learner's unique needs. Key areas of focus include the Universal Design for Learning, to facilitate the meaningful inclusion of learners with disabilities in general education classrooms. Pre-service teachers explore essential strategies for supporting diverse learners, including Positive Behavior Support, core modification and accommodation techniques, and appropriate assessment approaches. The course also covers Recognition of Prior Learning, multigrade classrooms, Mother Tongue Based-Multilingual Education, and education in emergencies to inform planning for formal, non-formal, and resource-limited contexts. Collaborative activities involve inclusive approaches and policy-to-practice cases, tiered supports, fair assessment, Individualized Education Program-informed accommodations, assistive technologies, inclusive digital/blended learning design, and community advocacy work. Pre-service teachers develop a learner diversity portfolio, a lesson design project, and a professional reflection and community engagement action plan reflecting inclusive, supportive, and culturally responsive learning environments that uphold the principles of accessibility, equity, and educational justice.

Course Title	Theories and Approaches in Literacy Education
Course Credits	3 units
Contact Hours	51-54 hours
Prerequisite/s	
Description	This course equips pre-service teachers with a strong foundation on how literacy develops within and across key stages and how learners' literacy characteristics shape developmental, content-based, or intervention-focused teaching. The course examines learner-, text-, and context-related factors that influence literacy learning and outcomes across diverse learner groups to inform evidence-based approaches for fostering the literacy skills needed for lifelong and life-wide learning. The course deepens pre-service teachers' understanding of major theories and perspectives on literacy acquisition and development, evolving definitions of and current and emerging issues on literacy, and evidence-based approaches in developing appropriate literacy skills. This preparatory course serves as an introduction for specialization courses on early literacy instruction in grades K-3 and the development of discipline-specific literacies in Grades 4 to 12. Pre-service teachers participate in oral presentations, viewing activities, workshops and observations emphasizing literacy-supportive learning environments and informing a learner-centered philosophy of literacy teaching. They analyze literacy needs, design literacy activities across domains and stages, and plan culturally responsive instruction across contexts and disciplines.

Course Title	Learner-Centered Teaching
Course Credits	3 units
Contact Hours	51-54 hours
Prerequisite/s	
Description	This course comprises in-depth study of the foundations and principles of learner-centered teaching and assessment that can be applied in diverse learning settings. It strengthens pre-service teachers' capacity to connect what they know about learners' characteristics, the Science of Learning, and inclusive teaching approaches and assessment practices that cater to the diverse backgrounds, needs, interests, and contexts of learners—while building safe, supportive, and equitable learning environments. The course involves examinations on key theories and emerging issues in learner diversity and inclusion in the Philippines, comparative analysis of learner-centered approaches and assessments for different settings, and exploration of teaching and assessment strategies across modalities. The course engages pre-service teachers in experiential and reflective activities including case scenario analysis, learner profiling, collaborative activities, and observations focusing on learner-centered approaches for different settings. Culminating tasks include a classroom management plan tailored to learner profiles and physical/digital learning spaces and a learning plan with demonstration teaching and post-teaching reflection.

Course Title	Learner Assessment
Course Credits	3 units
Contact Hours	51-54 hours
Prerequisite/s	
Description	This course develops pre-service teachers' ability to monitor, evaluate, support, and report student learning through sound assessment design and data-informed instructional decision-making. The course emphasizes designing, organizing, implementing, interpreting, and reporting results of assessments that support making informed decisions to enhance instructional effectiveness and improve learner outcomes. The course covers essential assessment concepts, including valid, reliable, fair, and ethical assessment practices for diagnostic, formative, and summative purposes, authentic and performance-based assessment, use of technology in assessment, and data analytics in education, with careful attention to diverse learner needs, accessibility, and equitable reporting of learner needs, progress, and achievement to key stakeholders. Pre-service teachers engage in activities such as constructing tests, developing rubrics, checklists, and rating scales; analyzing and reporting assessment data; utilizing digital assessment tools; and practicing various ways to provide constructive feedback and stakeholder communications. The course culminates in the development of a comprehensive assessment plan – clearly unpacked to include multiple tools, data sources, and strategies that demonstrate an integrated understanding of assessment for learning, of learning, and as learning.

Course Title	The Teacher as a Person and as a Professional
Course Credits	3 units
Contact Hours	51-54 hours
Prerequisite/s	
Description	This course enables pre-service teachers to demonstrate deep regard for teaching as a personal and professional commitment rooted in psychosocial and legal foundations. It immerses pre-service teachers in experiences that reveal the inextricable link between individual identity and professional practice. It ultimately examines how personal values, experiences, and beliefs shape teaching philosophies and approaches while developing mindfulness around holistic well-being, work-life balance, lifelong learning, and ethical responsibility that yields long-term success in the field. Experiential learning activities move from self-understanding to professional action premised on reflective and collaborative inquiry through case studies, simulations, and growth reflection essays. At the end of the course, pre-service teachers prepare a portfolio featuring a series of their reflections and culminating in a plan for personal and professional development for the period of teaching internship and the first three years of teaching, aligned with professional standards and behavioral indicators that uphold the dignity of teaching.

Course Title	Principles and Practices of Homeroom Guidance
Course Credits	3 units
Contact Hours	51-54 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the essential knowledge, skills, and values to design and facilitate effective homeroom guidance that supports learners' academic, personal-social, and career development within the Philippine education system. The course builds a strong grounding in the nature of homeroom guidance and its historical, legal, and ethical foundations. It delves into strategies for providing academic, personal, social, and career development support to learners, while simultaneously strengthening the pre-service teachers' advising and mentoring capabilities. The course design incorporates experiential learning activities that connect to contemporary school realities (e.g., learner well-being, bullying prevention, diverse learners in difficult circumstances, and collaboration with guidance counselors, families, and communities). Pre-service teachers develop strengths- and wellness-oriented approaches as well as practical skills, such as psychological first aid, learner assessment, record-keeping, and basic counseling-informed (non-therapy) interventions, through workshops, simulations, reflection exercises, and the use of applied tools. Assessment involves a combination of, authentic practitioner engagement, self-assessment reflections and application of principles to design a developmentally sequenced homeroom guidance facilitation guide with differentiated strategies, resources, and assessment plans.

Annex B
Descriptions of BCTEd Core Courses

Course Title	Fundamentals of Industrial Arts
Course Credits	3 units
Contact Hours	51-54 hours
Prerequisite/s	
Description	This course equips the pre-service teachers with foundational exploration of the principles, scope, and contemporary relevance of Industrial Arts within technological and industrialized societies. It examines key domains of Industrial Arts—including civil technology, drafting, electricity, welding, among others—while introducing essential concepts in shopwork, trade areas, tools and equipment, materials and their properties, local resource utilization, safety protocols, and basic mensuration. Emphasis is given to understanding industrial processes, products, occupations, and the broader socio-technological contexts that shape and are shaped by Industrial Arts education. This course aims to cultivate the fundamental skills, work habits, and professional attitudes necessary for productive engagement in industrial environments, while fostering an appreciation of the role of Industrial Arts in economic development, sustainable material use, and technological innovation. The course integrates discussions, demonstrations, and simple practical tasks, students that will develop awareness, appreciation, and positive attitudes toward work, technology, and the value of industry in personal and national development.

Course Title	Fundamentals of Family and Consumer Science
Course Credits	3 units
Contact Hours	51-54 hours
Prerequisite/s	
Description	This course provides foundational knowledge and understanding of family and consumer science as a vital component of career and technical education. It explores the foundational ideas, historical evolution, and connections between livelihood education and home economics in both individual and societal development. Pre-service teachers are introduced to practical life skills in food preparation, nutrition, clothing and textile care, home management, family relations, and resource utilization. The course promotes responsible consumerism, healthful living, and productivity in home and community life. It highlights the integration of scientific inquiry, mathematics, and technology in solving real-life problems related to home, livelihood, and environment. Through discussions, demonstrations, and practical tasks, pre-service teachers develop awareness, appreciation, and positive attitudes toward sustainable living, productivity, and the value of family and consumer science. The course demonstrates foundational competencies that support instructional planning, contextualized teaching, and learner empowerment in diverse educational settings.

Course Title	Fundamentals of Information and Communications Technology
Course Credits	3 units
Contact Hours	51-54 hours
Prerequisite/s	

Description	This course equips pre-service teachers with the pedagogical content knowledge and skills required to effectively teach Information and Communications Technology (ICT) concepts and applications across diverse educational contexts. It covers foundational topics such as understanding computer systems, productivity tools, internet navigation, and online tools, including web conferencing platforms, online form builders, and cloud storage applications. Pre-service teachers will also explore essential concepts of digital citizenship, netiquette, and the safe and ethical use of technology to guide learners in becoming responsible digital citizens. As the course progresses, pre-service teachers will develop their expertise in ICT education through the integration of topics such as introductory block coding, computer number systems, graphic design principles, video editing, and the creation of ICT-based instructional materials. These topics are explored in the context of teaching, with a focus on designing and delivering lessons that make ICT concepts meaningful and accessible to learners. Through hands-on activities, lesson planning, microteaching, collaborative projects, and practical applications, pre-service teachers will gain the skills and confidence needed to foster creativity, critical thinking, collaboration, and ethical technology use in diverse educational contexts.
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Course Title	Fundamentals of Agri-Fishery Arts
Course Credits	3 units
Contact Hours	51-54 hours
Prerequisite/s	
Description	This course equips pre-service teachers with a foundational understanding of Agri-Fishery Arts as an essential field within career and technical education. It examines the evolution, scope, and interrelated domains of crop production, animal production, and aquaculture, with attention to their roles in food security, livelihood development, and environmental sustainability. The discussion introduces fundamental principles, tools, and practices used in agricultural and fishery systems, emphasizing scientific inquiry, mathematics, and technology in addressing real-world production and resource management concerns. The course also considers sustainable food systems, ecological stewardship, and community-based livelihood strategies that strengthen rural and peri-urban resilience. Through structured discussions, guided demonstrations, and basic practical activities, pre-service teachers develop informed perspectives on sustainable living, responsible production, and the contribution of Agri-Fishery Arts to national development. It establishes foundational competencies that support instructional planning, contextualized pedagogy, and learner-centered engagement across diverse educational settings.

Course Title	Career and Technical Workplace and Entrepreneurship
Course Credits	3 units
Contact Hours	85-90 hours
Prerequisite/s	
Description	This course prepares pre-service teachers to develop workplace and entrepreneurial competencies in career and technical education. Pre-service teachers practice analyzing contexts, managing resources, applying leadership, problem-solving, and safety standards, and designing learner-centered, industry-aligned and sustainable training initiatives. By the end of the course, pre-service teachers will be able to apply workplace and entrepreneurial strategies, including occupational safety, health, and environment (OSHE) compliance and sustainability principles, to foster learner engagement, skill mastery, and effective career and technical training outcomes.

Course Title	Competency-based Teaching and Training (with emphasis on NTTC 1)
Course Credits	3 units
Contact Hours	51-54 hours
Prerequisite/s	
Description	This course equips pre-service teachers with competencies in planning, facilitating, and assessing competency-based teaching and learning within technical and vocational education and training (TVET) settings. The course covers the planning of training sessions, facilitation strategies that promote workplace-relevant skill development, and the creation of learning materials and assessment instruments. It emphasizes the application of andragogical principles and industry-aligned competency standards in the design of learner-centered training programs. The pre-service teachers engage in simulations of training facilitation and competency assessment to demonstrate the practical application and instructional adaptability in diverse training environments. Through guided practice and performance-based evaluation, pre-service teachers integrate assessment results to enhance instructional planning and support continuous skill mastery. By the end of the course, pre-service teachers demonstrate the ability to design, deliver, and assess competency-based learning experiences that foster learners' autonomy, workplace readiness, and lifelong learning within dynamic and industry-responsive TVET contexts.

Course Title	Technology for Teaching and Learning in Career and Technical Courses (with emphasis on NTTC 2)
Course Credits	3 units
Contact Hours	85-90 hours
Prerequisite/s	Competency-based Teaching and Training (with emphasis on NTTC 1)
Description	This course equips pre-service teachers with the knowledge, skills, and competencies to design, develop, utilize, and evaluate technology-based instructional materials tailored to the unique demands of career and technical specializations. It introduces pre-service teachers to foundational concepts of educational technology and progresses to the creation of instructional materials and systems that enhance flexible learning delivery. The course emphasizes the development of printed and multimedia-based learning resources, instructional designs, and innovative e-learning packages using Learning Management Systems (LMS). Pre-service teachers also explore advanced applications such as designing mock-ups and simulators, formulating technology-based strategies, and creating comprehensive learning systems to support diverse learners. It provides opportunities to apply innovative teaching strategies in various delivery modes, including institution-based, community-based, and enterprise-based training. Through hands-on activities, collaborative projects, and field-based experiences, pre-service teachers develop relevant instructional materials and implement technology-driven approaches to teaching and learning. Assignments include creating digital resources, designing technology-integrated lesson plans, and producing innovative systems. By the end of the course, pre-service teachers are prepared to foster inclusive, flexible, and future-ready learning environments that meet the evolving needs of learners in career and technical education.

Course Title	Teaching in Alternative Learning Contexts
Course Credits	3 units
Contact Hours	51-54 hours
Prerequisite/s	Competency-based Teaching and Training (with emphasis on

	NTTC 1); Technology for Teaching and Learning in Career and Technical Courses (with emphasis on NTTC 2)
Description	This course equips pre-service teachers with the knowledge, skills, and competencies to plan, deliver, and assess instruction in diverse alternative learning contexts beyond conventional classrooms. It focuses on flexible, inclusive, and learner-centered approaches to education, addressing the needs of out-of-school youth and adults (OSYA) and other diverse learners in non-traditional settings such as community centers, homes, mobile classrooms, and workplace environments. The course covers a range of contextualized instructional strategies, including modular and blended learning, distance and technology-enhanced education, community-based facilitation, and enterprise- or industry-based training. Pre-service teachers learn to design and implement innovative methods such as, but not limited to, radio-based Instruction, project-based learning, experiential learning, and personalized learning plans tailored to individual needs. It emphasizes promoting basic literacy, functional skills, second-chance education, and skill mastery aligned with national and global TVET standards. Learning activities include creating training designs, facilitating micro-teaching demonstrations, developing contextualized materials, and engaging in reflective practice to enhance professional growth. By the end of the course, pre-service teachers will be equipped to deliver adaptive, relevant, and technology-enhanced instruction that empowers learners, fosters employability, and supports lifelong learning in a variety of alternative learning environments.

Course Title	Capstone Project
Course Credits	3 units
Contact Hours	85-90 hours
Prerequisite/s	
Description	This course serves as a culminating academic experience where pre-service teachers are expected to integrate and apply their knowledge, skills, and professional competencies necessary to design and implement solutions to current and emerging issues in career and technical education. It provides an avenue for the demonstration of creativity, critical thinking, problem-solving abilities, collaboration, and ethics essential for professional practice and innovation. Projects can include prototypes, teaching modules, business plans, research-based interventions, or community-based solutions, each tailored to foster reflective practice and professional identity development, ensuring that pre-service teachers can generate practical and sustainable solutions aligned with current industry, community, and educational needs within the broader context of career and technical education.

Annex C
Description of BCTEd Major Courses

C.1 Major in Industrial Arts

Course Title	Carpentry (<i>mandatory</i>)
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips the pre-service teachers with the knowledge, technical skills, and work values aligned with the core competencies. It emphasizes mastery of plan reading and interpretation, accurate measurement and layout, preparation and selection of materials, safe and efficient use of hand tools and power tools, construction and installation of formwork, framing systems, partitions, doors, windows, cabinets, and other structural and non-structural wood components, as well as adherence to quality standards and occupational safety and health (OSH) policies. It covers introduction to carpentry works; construction materials and hardware; interpreting drawings and specifications; tools, equipment, and maintenance; cutting, shaping, assembling, and fastening techniques; wood joints; formwork and framing construction; installation of fixtures and finishing works; workplace communication; teamwork; and application of core, common, and supervisory competencies. It includes a competency-based training approach using lecture-demonstrations, guided hands-on workshop activities, simulations, task-based projects, collaborative work, and reflective practice aligned with industry conditions. At the end of the course, the pre-service teachers are required to plan, fabricate, and install a functional carpentry output—such as a framed wall section, formwork system, cabinet, or door-and-window assembly—demonstrating technical accuracy, craftsmanship, safety compliance, work efficiency, and performance standards.

Course Title	Technical Drafting (<i>mandatory</i>)
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the skills to model drafting techniques confidently and produce architectural working drawings and technical details using both manual drafting techniques and Computer-Aided Design (CAD) Software. The course is designed to complement concentration courses and prepare pre-service teachers for a better understanding of the field. It contains lectures, guided exercises and hands-on activities that deepen pre-service teachers' understanding and enable them to interpret and apply different drawing standards, symbols, and sheet requirements across structural, electrical, electronics, plumbing, and mechanical systems. Pre-service teachers complete the course by undergoing written assessment in drafting standards and conventions and by submitting a drawing portfolio of a complete project plan that showcases accuracy, clarity, spatial reasoning, and professional presentation that follows industry standards.

Course Title	Electrical Installation and Maintenance
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	

Description	This course equips pre-service teachers with the technical knowledge, skills, and safety discipline required to perform electrical installation and maintenance work in residential and small-scale commercial buildings with voltages not exceeding 600 volts, covering the proper use of hand tools, mensuration and electrical calculations, and the reading, preparation, and interpretation of electrical diagrams and technical drawings, and wiring layouts. It develops learners' capability to terminate and connect electrical wiring and electronic circuits, perform roughing-in activities, and carry out wiring and cabling works for single-phase distribution, power, and lighting systems, together with auxiliary applications such as fire detection and alarm systems (FDAS) and closed-circuit television (CCTV) systems. The course also includes the installation of electrical protective devices for distribution and grounding, as well as the installation of floor- and wall-mounted convenience outlets, lighting fixtures, switches, and auxiliary outlets. Through intensive laboratory activities, wiring board simulations, and project-based installations, pre-service teachers strengthen their competence in layout preparation, conduit and raceway installation, cable pulling, circuit termination, testing, commissioning, troubleshooting, and preventive maintenance while producing technical drawings, wiring plans, and installation outputs using industry-standard tools, instruments, wiring devices, and electrical components. Competency-based assessments emphasize hands-on demonstrations, integrated wiring projects, and compliance with safety standards and the Philippine Electrical Code to ensure readiness for technical-vocational teaching and industry-aligned practice.
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Course Title	Electronic Products Assembly and Servicing
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course develops the technical and pedagogical competencies of pre-service teachers in assembling, installing, and servicing electronic products, systems, and modules. It equips students with the ability to interpret schematic diagrams, design and fabricate printed circuit boards (PCBs), and perform systematic troubleshooting for consumer and industrial electronic devices in accordance with safety standards and industry best practices. The course covers both fundamental and advanced concepts in electronic assembly, component evaluation, circuit analysis, and servicing of audio, video, control, and power supply systems. Emphasis is placed on precision workmanship, adherence to specifications, preventive maintenance, and sustainable repair practices. Through lectures, laboratory activities, and project-based learning, students engage in electronic product assembly, PCB layout and preparation, circuit diagnostics, and repair of actual devices. Learning experiences include hands-on troubleshooting tasks, diagnostic documentation, prototype development, and the integration of servicing skills into instructional applications. Materials used include electronic components, testing instruments, PCBs, and standard servicing tools. Assessment methods consist of performance-based tasks, assembly and functionality checks, diagnostic/repair reports, and written examinations that measure technical mastery, compliance with safety protocols, and readiness to teach electronics concepts and skills in the Industrial Arts specialization.

Course Title	Graphic Arts
Course Credits	4 units
Contact Hours	102-108 hours

Prerequisite/s	
Description	This course equips pre-service teachers with knowledge and skills in visual communication and creative design, integrating traditional and digital approaches in graphic arts. It emphasizes the use of technology-driven tools such as digital photography, image editing, and digital printing for practical applications in t-shirt printing, product design, layout preparation, and advertising materials. Through hands-on projects, pre-service teachers will engage in the complete design process—from concept development and digital illustration to printing and advertising—while exploring the role of graphic arts in marketing, branding, entrepreneurship, and sustainable design practices.

Course Title	Creative Handicrafts Design and Production
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course prepares pre-service teachers to design, produce, and teach culturally rooted, innovative, and market-oriented crafts. It introduces fundamentals of handicraft production, sustainable and indigenous materials, contemporary craft design, product development, entrepreneurship, safety standards, and emerging craft technologies. Delivered through a lecture–laboratory format, it combines discussions with hands-on workshops, competency-based assessments, and project outputs. Industry exposure or collaboration with local artisans is encouraged to deepen cultural appreciation and entrepreneurial practice.

Course Title	Shielded Metal Arc Welding
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course develops the competencies of pre-service teachers in performing Shielded Metal Arc Welding (SMAW) on carbon steel plates in accordance with industry standards. It contains activities that enable learners to set up and maintain SMAW equipment, prepare and fit up weld materials, execute welds on carbon steel plates, and conduct visual inspection and repair of welds. Moreover, the course emphasizes accurate interpretation of welding symbols and drawings, welding parameters, application of different welding techniques for basic infrastructure, and strict adherence to occupational health and safety practices. Learners benefit from lectures, laboratory demonstrations, and project-based fabrication activities that build confidence in performing and teaching real-world welding tasks. Competence is assessed through both written tests on welding principles and performance tasks in 1F, 2F, 3F, 4F, 1G, 2G and 3G positions, evaluated based on precision, technique, and compliance with specifications and industry standards.

Course Title	Plumbing
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with foundational and intermediate knowledge, skills, and work values necessary for the installation, maintenance, repair, and basic supervision of plumbing systems in residential and small-scale commercial structures. It covers an introduction to the plumbing industry, tools and materials identification, occupational safety and health

	practices, relevant laws and codes, mensuration and layout, pipe cutting and joining, installation of water supply and drainage systems, fixture installation, system testing and commissioning, interpretation of technical drawings, materials estimation, quality control, and coordination of plumbing activities. The course adopts a competency-based, learner-centered, and experiential approach through lectures, demonstrations, hands-on laboratory work, simulations, project-based learning, and supervised field-oriented tasks that reflect actual workplace conditions. Emphasis is placed on safety compliance, accuracy, efficiency, teamwork, and professional work ethics. At the end of the course, pre-service teachers are required to plan, implement, test, and evaluate a complete plumbing project involving basic- to intermediate-level installations and are assessed based on system functionality, quality of workmanship, compliance with safety and plumbing standards, efficiency of work processes, completeness of documentation, and alignment with established performance criteria.
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Course Title	Masonry
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with fundamental knowledge, skills, and professional attitudes necessary for performing masonry works in residential and light commercial construction. The course aims to develop pre-service teachers' competency in interpreting masonry plans and specifications, selecting and preparing materials, and executing proper construction techniques such as bricklaying, blocklaying, plastering, concreting, tiling, and basic formwork in accordance with industry standards and safety regulations. It covers an overview of masonry tools and equipment, properties and proportions of construction materials, layout and measurement, mortar and concrete mixing, wall construction, finishing works, occupational health and safety practices, and quality control in masonry operations. Teaching methodology emphasizes competency-based and learner-centered approaches through a combination of interactive lectures, demonstrations, guided practice, hands-on laboratory activities, simulation tasks, and problem-based learning, allowing students to apply theoretical concepts to real-life construction scenarios. At the end of the course, pre-service teachers are required to plan, execute, and complete a small masonry project—such as constructing a masonry wall segment or simple structure—based on given drawings and specifications, demonstrating accuracy, workmanship quality, proper tool use, teamwork, adherence to safety standards, and efficient work practices, thereby preparing them for industry employment, certification, or further technical specialization.

Course Title	Tile Setting
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the knowledge, skills, and professional attitudes to install and repair tiles in residential, commercial, and institutional settings, emphasizing quality, safety, and industry standards. Pre-service teachers plan, prepare, cut, lay, align, grout, and finish various tile types on floors, walls, and curved surfaces, applying proper tools, materials, and safety practices. Learning is reinforced through demonstrations, hands-on activities, problem-based tasks, and

	real-world simulations. By the end of the course, pre-service teachers will be able to independently plan, execute, and evaluate tile installation and repair projects, demonstrating technical competence, workmanship, and compliance with occupational safety standards.
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Course Title	Automotive Servicing and Technology
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course prepares pre-service teachers to develop technical and pedagogical competencies in automotive, electrical, and electronic systems. Pre-service teachers practice analyzing automotive and educational contexts, managing diagnostic and repair resources, applying problem-solving strategies, adhering to safety standards, and designing learner-centered, industry-aligned, and sustainable training activities. By the end of the course, pre-service teachers will be able to apply workplace and technical servicing strategies, including occupational safety, health, and environment (OSHE) compliance and preventive maintenance principles, to foster learner engagement, technical mastery, and effective career and technical education outcomes.

Course Title	Commercial Air-Conditioning Installation and Servicing
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course prepares pre-service teachers to develop both technical and pedagogical competencies in commercial air-conditioning installation and servicing. It covers the installation, servicing, maintenance, troubleshooting, repair, and commissioning of commercial air-conditioning systems, with emphasis on interpreting technical drawings and manuals, applying systematic diagnostic and troubleshooting procedures, and ensuring quality workmanship. Pre-service teachers engage in hands-on activities that simulate workplace conditions, including piping and tubing work, electrical and control system connections, system testing, performance evaluation, and basic automation and control applications. The course highlights occupational safety and health standards, proper handling and management of tools and refrigerants, preventive maintenance practices, and the preparation of technical documentation and service reports. By the end of the course, pre-service teachers will be able to apply industry-based servicing strategies and design learner-centered, outcomes-based training plans and assessment activities that promote technical competence, safety awareness, and effective instruction in commercial air-conditioning installation and servicing.

Course Title	Construction Painting
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course prepares pre-service teachers to develop both technical and pedagogical competencies in construction painting through outcomes-based and competency-based instruction. It covers the preparation and proper use of tools, materials, and equipment; surface preparation for wood, metal, masonry, and concrete; paint mixing and tinting; application and finishing techniques using brushing, rolling, and spraying methods; estimation of material requirements; and repainting or retouching

	works, with emphasis on quality workmanship. The course places strong focus on occupational safety and health practices, environmental protection and waste management, proper handling of painting materials, and efficient use of resources in accordance with industry standards. Pre-service teachers engage in hands-on and simulated workplace activities that develop technical proficiency, quality control skills, and compliance with safety and environmental regulations. In addition to technical competencies, the course develops the capability of pre-service teachers to design learner-centered and outcomes-based training plans, instructional materials, and performance-based assessment tools for construction painting. By the end of the course, students are expected to demonstrate industry-aligned painting competencies and the ability to plan, implement, and evaluate teaching and training activities that promote technical mastery, safety awareness, environmental responsibility, and effective instruction in construction painting.
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C.2 Major in Family and Consumer Science

Course Title	Family Consumer and Resource Management (<i>mandatory</i>)
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the competencies to manage family resources effectively while promoting responsible consumer behavior and sustainable living. It emphasizes decision-making in budgeting, time management, and household planning across home, school, and community contexts. Pre-service teachers explore core principles of family resource management, including financial planning, consumer education, and the sustainable use of household resources. The course also integrates entrepreneurship, environmental stewardship, and community engagement to support family well-being and livelihood development. Instruction combines lectures, case studies, and hands-on activities that focus on real-life applications, such as budgeting exercises, consumer decision-making simulations, and community-based livelihood planning. Pre-service teachers analyze family needs, evaluate consumer choices, and apply practical strategies for managing time, energy, and finances. Assessment includes performance tasks, written evaluations, and project-based outputs aligned with family and consumer science competencies. Through these experiences, pre-service teachers develop instructional competence and contextualized teaching strategies that empower learners to make informed decisions, practice sustainability, and contribute to resilient households and communities.

Course Title	Entrepreneurship and Livelihood Development (<i>mandatory</i>)
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the competencies to plan, launch, and manage small-scale entrepreneurial ventures within home, school, and community settings. It emphasizes the application of business principles such as product development, budgeting, marketing, and resource management tailored to local contexts and community needs. Pre-service teachers explore foundational concepts in entrepreneurship, including opportunity seeking, business planning, financial literacy, customer relations, and ethical business practices. The course integrates livelihood skills from nationally recognized programs in food processing, dressmaking, and household services to support

	community-based enterprise development. Instruction is delivered through lectures, case studies, and hands-on project development focused on real-world entrepreneurial applications. Pre-service teachers engage in practical tasks such as creating business plans, prototyping products, and conducting market research within their school or community. Assessment includes performance-based outputs, written evaluations, and project presentations aligned with entrepreneurship competencies and community impact goals. Upon completion, pre-service teachers demonstrate readiness to teach entrepreneurship modules, initiate livelihood projects, and empower learners to pursue sustainable economic opportunities that strengthen family and community resilience.
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Course Title	Fundamentals of Garments and Clothing
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with foundational competencies in garment construction, clothing design, and textile application, emphasizing safe work practices, quality standards, and creative expression. It introduces essential concepts in apparel production, including fabric identification, measurement techniques, pattern drafting, cutting, sewing, and finishing methods suitable for home, school, and community-based settings. Pre-service teachers explore the cultural, functional, and economic significance of clothing and apply design principles such as balance, proportion, texture, and color in creating wearable garments. The course also highlights basic maintenance of sewing tools and equipment, proper handling of textiles, and the integration of sustainable practices using indigenous and recycled materials. Instruction is delivered through lectures, demonstrations, and hands-on workshops that focus on producing simple clothing items, such as blouses, skirts, trousers, and accessories. Pre-service teachers engage in practical tasks that develop precision, creativity, and craftsmanship. Assessment includes performance-based tasks, written evaluations, and project presentations aligned with TESDA competencies. Upon completion, pre-service teachers demonstrate readiness to teach garment-related modules, support livelihood initiatives, and empower learners to pursue clothing production as a creative and income-generating skill.

Course Title	Handicraft Production and Design
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the competencies to produce decorative crafts using appropriate tools, materials, and techniques while observing occupational health and safety standards. It emphasizes safe work practices, creative design, and the sustainable use of indigenous and recycled materials in crafting marketable products that meet quality and industry standards. Pre-service teachers explore the cultural and economic significance of handicrafts, studying various forms, including those made from bamboo, rattan, paper, textiles, beads, and recycled materials, alongside current industry trends. The course develops skills in identifying, classifying, and maintaining tools and materials, as well as applying design principles such as balance, harmony, texture, proportion, and color, through sketching and pattern-making. Instruction integrates theoretical and practical learning through lectures, demonstrations, and hands-on workshops. Pre-service teachers engage in producing

	baskets, beadwork, paper crafts, and similar items, with emphasis on creativity, precision, and sustainability. Assessment includes performance tasks, project-based outputs, and alignment with national competency evaluations. Upon completion, pre-service teachers demonstrate readiness to support livelihood ventures and deliver contextualized instruction in school and community-based settings, empowering learners to develop resourcefulness, entrepreneurial skills, and appreciation for local craft traditions.
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Course Title	Personal Care and Aesthetic Services
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the competencies to deliver personal care and aesthetic services, including nail care, hairdressing, skin care, and makeup application, in accordance with national competency standards for beauty and wellness. It emphasizes safe work practices, client-centered service delivery, and professional grooming techniques that promote hygiene, wellness, and self-confidence among learners. Pre-service teachers develop skills in performing manicures and pedicures, hand and foot spas, facial treatments, hair cutting and styling, body massages, and cosmetic applications. The course covers basic, common, and core competencies, including workplace communication, teamwork, career professionalism, and occupational health and safety. Instruction is delivered through lectures, demonstrations, and hands-on salon-based training. Pre-service teachers engage in practical tasks including client handling, service preparation, product application, and post-service care, with emphasis on precision, sanitation, and customer satisfaction. Assessment includes written tests, performance-based tasks, and institutional competency evaluations aligned with national standards. Upon completion, pre-service teachers demonstrate readiness to teach personal care modules, support livelihood programs, and empower learners to pursue careers or entrepreneurial ventures in the beauty and wellness industry.

Course Title	Bread and Pastry Production
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with foundational competencies in bread and pastry production, emphasizing food safety, proper use of baking tools, and quality standards aligned with national competency guidelines. It introduces essential techniques in preparing, baking, decorating, and packaging a variety of baked goods such as breads, pastries, cookies, and cakes suitable for home, school, and community-based settings. Pre-service teachers explore the functions of ingredients, baking procedures, and presentation methods while applying principles of hygiene, sanitation, and cost-effective production. The course also integrates basic entrepreneurial concepts, including product costing, packaging design, and market readiness. Instruction is delivered through lectures, demonstrations, and hands-on laboratory activities focused on real-world baking applications. Pre-service teachers engage in practical tasks such as measuring ingredients, operating baking equipment, preparing baked products, and applying finishing techniques. Assessment includes performance-based tasks, written evaluations, and project presentations aligned with national competency standards. Upon completion, pre-service teachers demonstrate readiness to teach

	bread and pastry modules, support school-based food enterprises, and guide learners in developing baking skills for livelihood and community development.
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Course Title	Principles of Food Preparation
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with foundational competencies in food preparation, emphasizing safety, sanitation, nutrition, and efficient use of kitchen tools and ingredients. It introduces the principles and techniques essential to preparing, cooking, and presenting a variety of food items for home, school, and community settings. Pre-service teachers explore topics such as food classification, meal planning, portion control, basic cooking methods, and the sensory evaluation of food. The course also highlights the importance of food safety standards, proper storage, and the nutritional value of ingredients in promoting health and well-being. Instruction is delivered through lectures, demonstrations, and hands-on laboratory activities that simulate real-life food preparation scenarios. Pre-service teachers engage in practical tasks such as measuring ingredients, preparing simple dishes, and applying plating techniques, with emphasis on accuracy, hygiene, and time management. Assessment includes written evaluations, performance-based tasks, and project-based outputs aligned with food preparation competencies. Upon completion, pre-service teachers demonstrate readiness to teach basic culinary concepts and support learners in developing essential life skills and healthy eating habits through contextualized food preparation activities.

Course Title	Food Safety and Product Packaging
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the competencies to apply food safety principles and packaging techniques in the preparation, handling, and marketing of food products. It emphasizes hygienic and safety practices across the entire food flow, from purchasing, receiving, and storage to issuance, preparation, cooking, holding, and service, ensuring compliance with national competency standards and institutional food safety training. Pre-service teachers explore food hazards, foodborne illnesses, high-risk foods, and the critical role of time and temperature control, alongside personal hygiene, hygienic premises and equipment, and pest management. The course also covers sanitation, quality assurance, and regulatory compliance, including food safety laws and standards. Pre-service teachers develop skills in contamination prevention, hazard analysis, and shelf-life extension while applying eco-friendly packaging strategies, food-grade materials, and sustainable labeling practices. Instruction integrates lectures, demonstrations, and hands-on activities such as food safety inspection, packaging design, and labeling application. Practical tasks include preparing food items for safe storage and packaging, selecting suitable materials, designing product labels, and ensuring compliance with food safety and sustainability standards. Assessment consists of written evaluations, performance-based tasks, and project presentations aligned with industry practices. Upon completion, pre-service teachers demonstrate readiness to teach food safety and packaging concepts, support school-based food enterprises, and guide learners in producing safe, hygienic, and market-ready food products for home, school, and community settings.

C.3 Major in Information and Communications Technology

Course Title	Computer Systems and Technical Support
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the foundational knowledge, skills, and attitudes required to provide technical support and computer systems servicing in various educational and professional contexts. It begins with basic competencies such as installing and configuring computer systems, including operating system installation, updates, and peripheral setup. Pre-service teachers then progress to troubleshooting hardware and software issues, ensuring efficient and reliable system performance. The course also covers basic networking concepts, including setting up and maintaining local area networks (LAN) and understanding network configurations. Additionally, it emphasizes technical support, communication and documentation, equipping pre-service teachers with the skills to deliver effective customer service and maintain accurate records of technical issues and solutions. Through hands-on activities, project-based tasks, and collaborative exercises, pre-service teachers gain practical experience in system servicing, network setup, and customer engagement. By the end of the course, pre-service teachers demonstrate their ability to apply technical expertise, problem-solving, and professional communication to ensure reliable system operation and effective technical support in diverse settings.

Course Title	Computer Programming and Software Development
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the foundational knowledge and technical skills needed to develop and program software applications and websites using industry-standard programming languages and tools. It emphasizes key concepts in web development, object-oriented programming, and database management. Pre-service teachers learn to design and develop responsive web applications using HTML, CSS, JavaScript, C#, and ASP.NET MVC architecture, incorporating features like CRUD operations and mobile application conversion. The course also covers Java programming, including basic syntax, operators, flow control structures, arrays, object-oriented programming principles, exception handling, multithreading, and graphical user interface (GUI) development to create innovative and interactive applications. Additionally, pre-service teachers gain expertise in database management systems, SQL syntax, and PL/SQL programming to manipulate data efficiently and integrate databases with programming languages. Through hands-on activities, project-based assignments, and collaborative tasks, pre-service teachers develop algorithms, flowcharts, and pseudocode to visualize and implement solutions to real-world problems. By the end of the course, pre-service teachers demonstrate their ability to create basic web applications, Java-based programs, and database-driven systems, preparing them to apply programming and software development skills in educational and professional contexts.

Course Title	Visual Communication and Graphic Design
Course Credits	4 units

Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the knowledge, skills, and creativity to effectively apply visual communication and graphic design principles in creating impactful and professional designs. The course focuses on developing competencies in various aspects of graphic design, including logo creation, print media design, user experience (UX) and user interface (UI) design, product packaging, 2D and 3D booth displays, traditional and digital illustration, and concept art. Pre-service teachers utilize industry-standard software, tools, and materials to create visually appealing and functional designs that meet professional standards. They explore fundamental principles of visual design, such as composition, color theory, typography, and layout, while also learning traditional and digital drawing techniques to create basic shapes, figures, objects, and vector art. The course emphasizes the importance of analyzing design briefs, gathering information for concept art, and applying appropriate styles, techniques, and costing methods to meet client needs. Through hands-on projects, collaborative tasks, and creative problem-solving, pre-service teachers gain practical experience in designing and developing visual materials for a variety of applications. By the end of the course, pre-service teachers demonstrate their ability to create professional-quality designs that effectively communicate ideas and meet industry standards in educational and professional contexts.

Course Title	Digital Design and Animation
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the knowledge, skills, and techniques necessary to create digital designs and animations using both traditional and digital methods. It focuses on the principles of character design, animation workflows, and the integration of hand-drawn and digital techniques to produce professional-quality animation outputs. Pre-service teachers learn traditional drawing techniques for creating character designs, cleaned-up key drawings, and in-between drawings, which form the foundation for animation. They also explore digital animation processes, including creating digital cleaned-up key drawings, in-between drawings, and 2D digital cut-out animations. The course emphasizes the development of tradigital animation, which combines traditional and digital methods, as well as the export of animation projects into video file formats. Pre-service teachers gain practical experience in creating storyboards, key poses, and animation breakdowns while learning to calculate animation costs based on industry standards. Through hands-on activities and project-based learning, pre-service teachers develop technical expertise, creativity, and problem-solving skills essential for producing high-quality animations. By the end of the course, pre-service teachers demonstrate their ability to design and animate characters, create engaging digital animations, and apply industry-standard practices in educational and professional settings.

Course Title	Web Development and E-Commerce
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	

Description	This course equips pre-service teachers with the knowledge, skills, and competencies to design, develop, and manage websites and e-commerce platforms, preparing them to create functional, responsive, and user-centered digital solutions. It begins with foundational web development concepts, focusing on software methodologies, website planning, and the principles of responsive design to ensure seamless user experiences across devices. Pre-service teachers develop skills in creating interactive websites using HTML, CSS, and JavaScript, integrating dynamic and engaging features that enhance usability. The course progresses to the development of website backend systems, including database management, server-side scripting, and web server configuration, enabling pre-service teachers to build data-driven and scalable web applications. E-commerce concepts are integrated throughout the course, highlighting their relevance in the digital economy and allowing pre-service teachers to design and implement online platforms that support secure transactions, digital marketing strategies, and customer engagement. Through hands-on activities, project-based tasks, coding exercises, and collaborative projects, pre-service teachers gain practical experience in web development and e-commerce. By the end of the course, pre-service teachers demonstrate their ability to create interactive and responsive websites, develop backend systems, and apply e-commerce strategies to meet the demands of modern education and digital business environments.
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Course Title	Computer Systems and Network Administration
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the knowledge and technical skills to design, implement, and manage computer systems and networks in educational and organizational settings. The course begins with foundational topics such as the principles of computer networking, types of network technologies, and the functions of networking devices. Pre-service teachers then progress to practical applications, including local-area network (LAN) design and setup, router, switch, and wireless configuration, and the implementation of network services such as file sharing, print servers, and user access management. The course also covers basic server setup and administration, network security protocols, user access control, and techniques for network monitoring and troubleshooting. Emphasis is placed on creating reliable, secure, and efficient systems that enhance connectivity, collaboration, and productivity in teaching and learning environments. Through hands-on activities, case studies, and simulations, pre-service teachers develop technical expertise and problem-solving skills to address real-world technological challenges. They also explore the ethical, practical, and pedagogical implications of network administration, reflecting on their role in fostering innovation and efficiency in education. By the end of the course, pre-service teachers will demonstrate their ability to create and manage technology-driven solutions that support inclusive, effective, and innovative educational practices.

Course Title	Digital Media Production
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	

Description	This course equips pre-service teachers with the knowledge, skills, and tools to design, create, and produce multimedia content that enhances communication and supports effective learning experiences. It introduces foundational concepts and practices in audio production, focusing on recording, editing, and mixing sound to produce clear and engaging audio materials. Pre-service teachers then progress to video production, where they explore photography, camera functions, video editing, and filmmaking techniques to create projects such as short films, music videos, and digital storytelling. Finally, the course delves into print production, teaching pre-service teachers how to design and prepare conceptual artwork for professional and commercial use with a focus on sustainable design and effective communication with clients and collaborators. The course emphasizes visual literacy, narrative structure, technical accuracy, and strategic use of media in educational and professional contexts. Through hands-on workshops, collaborative projects, and peer critiques, pre-service teachers develop videos, podcasts, graphics, and other multimedia materials tailored to instructional and contextual goals. Assessments include creative projects, presentations, and a professional-grade portfolio that demonstrates their ability to produce engaging and innovative content for teaching, communication, and entrepreneurial purposes.
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Course Title	Telecommunications and Broadband Technology
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the technical knowledge, practical skills, and professional competencies required to install, maintain, and troubleshoot telecommunications and broadband systems, ensuring alignment with industry standards and best practices. It focuses on two key areas: Telecommunications Outside Plant (OSP) and Subscriber Line Installation and Broadband Installation (Fixed Wireless Systems). Pre-service teachers begin by developing foundational skills in installing pole hardware, cable terminals, line wires, and accessories, progressing to performing main cable installations, splicing and joining aerial or underground copper cables, and troubleshooting and correcting cable faults and errors. They then advance to installing Plain Old Telephone Service (POTS) and Digital Subscriber Lines (DSL). In the broadband module, pre-service teachers first learn to install masts and accessories, followed by laying out and configuring cables, installing and configuring Customer Premises Equipment (CPE), and delivering exceptional customer service. The course emphasizes hands-on activities, project-based learning, and collaborative tasks to provide pre-service teachers with practical experience in managing reliable communication systems. By the end of the course, pre-service teachers demonstrate the ability to design, implement, and maintain telecommunications and broadband systems for educational and professional applications, while upholding ethical and industry standards.

Course Title	Contact Center and Customer Experience Management
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	

Description	This course equips pre-service teachers with foundational knowledge and skills in communication and customer service, preparing them for roles in contact centers and customer experience management. It focuses on developing strong interpersonal communication, customer relationship management (CRM), and problem-solving skills essential for delivering quality customer service in organizational settings such as business process outsourcing (BPO) industries. Pre-service teachers explore the principles of contact center operations, customer service workflows, and strategies to enhance customer satisfaction. The course emphasizes entry-level competencies, including effective communication, active listening, handling customer inquiries, and managing customer feedback. Pre-service teachers gain insights into the use of basic CRM tools and customer service technologies while understanding their application in real-world contact center environments. The course integrates concepts from communication, business management, and customer service, emphasizing discipline and professionalism in workplace settings. Through hands-on activities, role-playing, and case studies, pre-service teachers demonstrate their ability to manage customer interactions, apply communication strategies, and contribute to improving customer experiences. By the end of the course, pre-service teachers are expected to demonstrate an understanding of basic contact center operations and entry-level customer service skills, preparing them to excel in professional environments requiring effective customer engagement.
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Course Title	Emerging and Immersive Technologies in Education
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the knowledge and skills to integrate emerging technologies into educational practices, fostering innovative, inclusive, and future-ready learning environments. It begins with foundational concepts in digital literacy, ethical technology use, and the principles of digital citizenship and media literacy, emphasizing responsible and critical engagement with online platforms. Pre-service teachers then explore AI-driven personalized learning, focusing on predictive algorithms, adaptive teaching strategies, and AI-powered content creation to enhance student success and streamline instructional design. Immersive technologies, such as virtual reality (VR) and augmented reality (AR), are examined for their potential to create engaging and interactive learning experiences. Learning analytics and data-driven decision-making are introduced to help pre-service teachers leverage data insights to improve instructional practices and student outcomes. Cybersecurity and student privacy are emphasized, with strategies for safeguarding data and ensuring compliance with ethical and legal standards. Sustainability and responsible AI use are also explored, promoting ethical and future-proof integration of educational technology. Through hands-on activities, case studies, collaborative projects, and reflective writing, pre-service teachers develop critical thinking, creativity, and technical proficiency. By the end of the course, pre-service teachers are prepared to design and implement secure, innovative, and impactful technology-enhanced learning experiences.

C.4 Major in Agri-Fishery Arts

Course Title	Soil Fertility and Management
Course Credits	4 units
Contact Hours	102-108 hours

Prerequisite/s	
Description	This course equips pre-service teachers with the competencies to assess, maintain, and enhance soil fertility for sustainable and productive crop production. It develops skills in soil analysis, nutrient management planning, and the application of organic and inorganic fertilizers based on specific crop requirements and environmental considerations. The course covers fundamental concepts in plant nutrition, soil fertility, and nutrient dynamics, including soil testing and plant tissue analysis, nutrient sources and application methods, soil pH management, liming, and integrated nutrient management strategies. Emphasis is placed on sustainable practices that promote soil health, conserve resources, and reduce environmental degradation. Instruction integrates lectures, laboratory exercises, and field-based demonstrations to provide both theoretical understanding and practical application. Pre-service teachers perform activities such as soil sampling, data interpretation, and preparation of fertilization plans, ensuring precision and sustainability. By the end of the course, they demonstrate the ability to implement effective, science-based soil fertility and management practices aligned with agricultural competency standards.

Course Title	Principles of Livestock and Aquaculture
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the essential competencies in the management and production of poultry, swine, ruminants, and aquaculture species. It provides a comprehensive understanding of animal husbandry principles, covering breeding, nutrition, housing, health management, and sustainable production practices. The course emphasizes animal welfare, biosecurity, and environmental stewardship in line with current agricultural and industry standards. Through laboratory activities and experiential learning, pre-service teachers develop practical skills in handling, feeding, and caring for various livestock and aquatic species. It also enhances their ability to integrate scientific and technical knowledge into effective instructional strategies. By the end of the course, pre-service teachers demonstrate the capability to apply sound production practices and teaching approaches that promote efficiency, sustainability, and ethical responsibility in animal production systems.

Course Title	Agricultural Crops Production
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with fundamental competencies in the production and management of cereal, legume, and vegetable crops. It encompasses essential concepts and practices in land preparation, seed selection, crop establishment, nutrient and water management, pest and disease control, harvesting, and postharvest handling. Emphasizing both theoretical understanding and practical application, the course engages pre-service teachers in laboratory and field-based learning experiences to enhance their proficiency in good agricultural practices and safety standards. It further develops their capacity to plan, implement, and evaluate crop production activities that respond to local, community, and industry needs. By the end of the course, pre-service teachers demonstrate the ability to apply sustainable and scientifically grounded agricultural

	practices, integrating appropriate instructional strategies for effective teaching and learning in agricultural crop production.
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Course Title	Sustainable Food Systems Technology
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the competencies to manage agricultural crops and aquaculture systems as integrated and complementary enterprises that promote food security, economic productivity, and environmental sustainability. It integrates plant cultivation, aquatic organism culture, and agribusiness perspectives while aligning with national competency standards and policies. The course covers crop science, fruit and vegetable production, ornamental plant cultivation, nursery and greenhouse management, and aquaculture systems, including pond, cage, and tank culture. Emphasis is placed on sustainable soil, water, and nutrient management, as well as integrated pest and disease control for both plants and aquatic organisms. Through lecture discussions, laboratory and field activities, and project-based learning, pre-service teachers apply concepts to develop innovative systems, such as aquaponics and climate-resilient production models. Microteaching activities provide opportunities to integrate horticulture and aquaculture topics into instruction, while entrepreneurial training enhances skills in developing, processing, and marketing agri-aqua products.

Course Title	Food Processing
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the competencies to process food products through various preservation methods while ensuring quality, safety, and compliance with regulatory standards. It enables pre-service teachers to apply techniques such as salting, curing, fermentation, drying, and thermal processing, including proper packaging, labeling, and storage. Topics include the processing of meat, fish, fruits, and vegetables using approved preservation methods, food safety practices, equipment operation, and applying product knowledge and quality assurance procedures to complete work operations relevant to both household and commercial production. Learning experiences combine lectures, demonstrations, and hands-on laboratory activities that emphasize the preparation of raw materials, operation of processing equipment, and packaging of finished products. By the end of the course, pre-service teachers demonstrate the ability to produce safe, high-quality food products that meet industry and certification standards.

Course Title	Pest Management and Crop Protection
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the competencies to identify, manage, and control pests and diseases affecting agricultural crops using environmentally sound, sustainable approaches. It provides a scientific foundation in pest biology, ecology, and economic significance, integrating theoretical and practical principles of crop protection. The course covers major pest groups, including insects, weeds, plant pathogens, and

	vertebrates, and introduces effective pest monitoring, diagnosis, and integrated pest management (IPM) strategies. Emphasis is placed on cultural, mechanical, biological, and chemical control methods that promote ecological balance and reduce environmental hazards. The course includes competencies such as identifying common crop pests and diseases, applying preventive and control measures, practicing occupational health and safety, and maintaining tools and equipment used in pest management. Instruction is delivered through lectures, laboratory exercises, and field-based demonstrations where pre-service teachers perform pest identification, sampling, and control procedures. Upon completion, pre-service teachers are expected to demonstrate proficiency in teaching IPM and are prepared for competency assessments.
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Course Title	Organic Agriculture
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the competencies to produce organic farm products, including vegetables, poultry, fertilizers, and natural extracts, using sustainable and eco-friendly practices. It enables them to apply techniques in organic farming, animal care, and resource management while maintaining compliance with safety, quality, and environmental standards. Topics include organic vegetable and poultry production, organic fertilizer concoction preparation, and organic hog and small ruminant production. It also covers farm safety, equipment operation, estimation, recordkeeping, and sustainable resource use. Instruction integrates lectures, demonstrations, and hands-on farm activities emphasizing composting, planting, animal care, and preparation of organic inputs. By the end of the course, pre-service teachers demonstrate proficiency in producing high-quality organic products while promoting ecological balance and community-based agricultural sustainability.

Course Title	Fundamentals of Aquaculture
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course introduces pre-service teachers to the fundamental concepts, ecological foundations, and basic systems of aquaculture as a food production and environmental management discipline. It covers the biological characteristics of major cultured species, the structure and function of aquatic ecosystems, and scientific principles that influence growth, reproduction, and water quality. Learners explore various aquaculture systems—including ponds, tanks, cages, and sea-based setups—through lectures, guided discussions, demonstrations, and observational activities. The course emphasizes sustainability, environmental stewardship, and resource efficiency while providing introductory exposure to pre-operational and basic operational practices, such as site preparation, simple hatchery or nursery observation, feeding, and basic stock management. By the end of the course, pre-service teachers will demonstrate foundational knowledge of aquaculture and be able to design learner-centered, outcomes-based instructional activities suitable for further study in operational or production-focused aquaculture courses.

Annex D
Description of BCTEd Concentration Courses

D.1 Major in Industrial Arts

D.1.1 Automotive Technology

Course Title	Fundamentals of Automotive Technology with Basic Driving
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with foundational and applied competencies in the fundamentals of automotive technology, with basic driving for instructional and entry-level technical-vocational contexts. It emphasizes understanding vehicle systems and engine operations, together with the development of essential driving knowledge, road safety awareness, and basic vehicle handling skills. The course covers the history and evolution of automotive technology, vehicle classification, and the construction, functions, and basic operating principles of gasoline and diesel engines guided by fundamental thermodynamic concepts. It introduces core automotive systems—including engine, chassis, electrical, braking, steering, suspension, and drivetrain systems—along with the proper selection, use, inspection, and maintenance of tools, equipment, and materials in an automotive workshop. The course also develops learners' competencies in basic driving theory and practice, including traffic rules and regulations, defensive driving principles, vehicle pre-operation inspection, basic maneuvering, and safe on-road practices aligned with national road safety standards. The course also highlights workplace organization, occupational safety and health requirements, environmental protection practices, and ethical conduct essential to automotive and transport-related training environments. Through lectures, demonstrations, driving simulations, and hands-on laboratory and practical driving activities, pre-service teachers develop technical fluency, safety consciousness, diagnostic reasoning, and responsible driving behavior. Assessment tasks include written examinations on automotive systems and traffic regulations, workshop-based performance tasks, basic driving performance assessments, and microteaching activities that prepare learners for instructional delivery, workshop supervision, and industry-aligned automotive and driving education.

Course Title	Car Care Servicing, Emission Control, and Tune-Up
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the knowledge and competencies to perform preventive maintenance, lubrication servicing, emission control, and tune-up procedures on gasoline and diesel vehicles in accordance with industry standards and TESDA competency qualifications. It covers the interpretation of service manuals, the application of periodic maintenance schedules, and the use of diagnostic tools and emission testing equipment aligned with environmental regulations. The course emphasizes servicing of lubrication and cooling systems, adjustment of ignition and fuel systems, evaluation of emission control functions, and the systematic diagnosis and correction of engine performance issues. Laboratory activities train students to perform tune-up procedures accurately and safely while documenting service outcomes and adhering to workplace safety and environmental practices. Pre-service teachers also develop lesson plans, instructional guides, and microteaching

	demonstrations that translate technical servicing tasks into competency-based instruction for the K to 12 Automotive Track. By the end of the course, they demonstrate applied technical proficiency, effective workshop practices, and the ability to apply innovation, problem-solving, and design-thinking (IPD) in both automotive servicing and instructional delivery.
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Course Title	Powertrain and Transmission System
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the foundational knowledge and applied skills necessary to understand, service, and teach automotive powertrain and transmission systems in alignment with industry standards and TESDA competency qualifications. It covers the construction, operating principles, and performance characteristics of clutches, gearboxes, automatic and manual transmissions, transfer cases, differentials, and final drive assemblies. Emphasis is placed on identifying power flow, analyzing gear ratios, diagnosing transmission faults, and performing servicing procedures using appropriate tools, measuring devices, and service manuals. Laboratory activities allow pre-service teachers to practice disassembly, inspection, adjustment, reassembly, and operational testing of powertrain components while observing workplace safety and environmental guidelines. The course also requires students to prepare instructional guides, job sheets, and microteaching demonstrations that translate complex mechanical concepts into competency-based learning for the K to 12 Automotive Track. By the end of the course, pre-service teachers demonstrate technical proficiency in diagnosing and servicing transmission and drivetrain systems and apply innovation, problem-solving, and design-thinking (IPD) in both workshop servicing and instructional practice.

Course Title	Chassis and Suspension Systems
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the technical and pedagogical competencies required to inspect, diagnose, service, and repair automotive chassis, suspension, steering, and braking systems in accordance with industry standards and TESDA competency qualifications. It covers the functions and servicing procedures for springs, shock absorbers, stabilizers, linkages, ball joints, and wheel assemblies, along with steering mechanisms ranging from manual to hydraulic and electronic power-assisted systems. The course also addresses braking systems, including drum, disc, and anti-lock braking systems (ABS), and emphasizes accurate wheel alignment and balancing to ensure vehicle stability, handling performance, and safety. Laboratory activities develop systematic troubleshooting and precision measurement skills using appropriate tools and equipment while reinforcing adherence to safety and environmental practices. Pre-service teachers also design lesson plans, teaching guides, and job sheets for the K to 12 Automotive strand, enabling them to translate complex mechanical concepts into competency-based instruction. By the end of the course, they demonstrate technical proficiency, effective workshop management, and the ability to apply innovation, problem-solving, and design-thinking (IPD) in both vehicle servicing and teaching practice.

Course Title	Automotive Electrical and Electronics System
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Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course provides pre-service teachers with a comprehensive understanding of the principles and applications of automotive electrical and electronic systems. It presents the construction, operation, diagnosis, and servicing of key systems such as ignition, charging, starting, lighting, instrumentation, body electronics, and computer-controlled engine management. The course trains learners to interpret wiring diagrams, perform circuit analysis, and use digital and computerized diagnostic tools, including OBD-II scanners and electronic test equipment, while observing safety and industry-standard procedures. It introduces the functions of electronic fuel injection (EFI) systems and sensor-based engine controls to support efficient vehicle performance. To strengthen instructional readiness, the course guides pre-service teachers in developing lesson plans, learning materials, and assessment tools aligned with the K to 12 Automotive curriculum and relevant qualifications, followed by microteaching demonstrations. By integrating technical knowledge with instructional planning and delivery, the course equips future automotive teachers with the competence to teach, troubleshoot, and facilitate learning in diverse educational and workshop settings.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Small Engine Repair and Motorcycle Servici
4 units
102-108 hours

This course provides pre-service teachers with the technical knowledge and applied skills needed to diagnose, service, and repair small engines and motorcycles. It covers the operating principles of two-stroke and four-stroke engines, including fuel, lubrication, cooling, and ignition systems, along with motorcycle chassis, suspension, transmission, and electrical assemblies. The course trains learners to perform troubleshooting procedures, tune-ups, precision measurements, and safety inspections using industry-standard tools and equipment in accordance with the required competency qualifications. Emphasis is placed on workshop safety, accurate diagnosis, and adherence to service manuals and specifications. To prepare pre-service teachers as effective instructors, the course integrates lesson planning, instructional material development, and microteaching demonstrations aligned with the K to 12 TVL curriculum. Through project-based laboratory activities and authentic servicing tasks, learners apply technical skills while developing pedagogical strategies that support skill transfer, learner engagement, and competency-based assessment. By the end of the course, pre-service teachers demonstrate readiness to perform small engine servicing and to teach related competencies in school and community learning environments.

Course Title
Course Credits
Contact Hours

Automotive HVAC Systems
4 units
102-108 hours

Prerequisite/s
Description

This course equips pre-service teachers with the technical knowledge and practical skills required to service, diagnose, and maintain automotive heating, ventilation, and air-conditioning (HVAC) systems. It covers the operating principles and functions of major components such as the compressor, condenser, evaporator, receiver-drier, expansion valve, and related control circuits. The course emphasizes proper handling of refrigerants, adherence to safety procedures, and compliance with environmental regulations, particularly in relation to climate protection and waste management. Pre-service teachers learn to perform system inspections, leak detection, pressure testing, evacuation, recharging, and performance evaluation using industry-standard equipment aligned with required competencies. In support of their instructional role, the course integrates lesson plan development, teaching demonstration activities, and preparation of competency-based learning and assessment materials for the K to 12 Automotive strand. Through laboratory practice and guided teaching application, pre-service teachers develop both technical proficiency and pedagogical competence, demonstrating readiness to perform HVAC servicing tasks and to effectively teach these skills in school and community-based learning environments.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Automotive Computer-Aided Design (CAD)
4 units
102-108 hours

This course equips pre-service teachers with the technical and pedagogical competencies necessary to design, draft, and model automotive components using Computer-Aided Design (CAD) software. It introduces digital drafting conventions, geometric construction, 2D detailing, and 3D part and assembly modeling based on industry standards, allowing pre-service teachers to visualize automotive systems and analyze form, fit, and function in the context of manufacturing and servicing processes. The course also provides exposure to basic simulation and rendering tools to support performance evaluation and design verification. Emphasis is placed on accuracy, technical documentation, and adherence to automotive drawing standards as essential professional practices. To support instructional application, the course trains pre-service teachers to develop lesson plans, visual teaching aids, and assessment activities for the K to 12 Automotive strand that integrate CAD-based demonstrations and project-based learning approaches. Through laboratory-based modeling tasks, guided design exercises, technical reporting, collaborative drafting activities, and microteaching sessions, pre-service teachers

gain proficiency in CAD use while strengthening their capacity to teach design concepts effectively in automotive education settings.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Engine Overhauling, Performance, and Testi

4 units
 102-108 hours

This course equips pre-service teachers with the technical and pedagogical competencies required to perform complete engine overhauling and performance evaluation in both gasoline and diesel engines. It covers engine operating principles, systematic disassembly and inspection, precision measurement, component repair and replacement, and proper reassembly procedures that restore engine efficiency and reliability. Pre-service teachers learn to use precision tools, diagnostic devices, and engine testing equipment to identify wear, evaluate engine performance, and troubleshoot operational problems. The course emphasizes adherence to industry servicing standards, workshop safety practices, and required competencies. Performance testing, tuning, and analysis of engine output are integrated to develop proficiency in assessing engine condition and operational outcomes. To support their role as future educators, pre-service teachers prepare lesson plans, instructional modules, and competency-based assessment tools aligned with the K to 12 Automotive strand and demonstrate teaching strategies in microteaching sessions. Through structured laboratory work and instructional application, students develop both technical mastery and the ability to effectively teach engine servicing concepts and procedures in classroom and workshop settings.

Course Title	Emerging Automotive Technologies
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with foundational and applied competencies in emerging automotive technologies for contemporary and future-oriented technical–vocational education. It emphasizes the understanding, analysis, and instructional application of modern vehicle systems such as hybrid and electric powertrains, high-voltage energy storage systems, advanced automotive electronics, sensor-based systems, and digitally controlled subsystems. The course examines the evolution of automotive technologies toward intelligent, connected, and sustainable mobility, including the basic concepts of electrification, power electronics, battery management systems, regenerative braking, and electronically controlled drivetrains. The course further develops learners' competencies in the interpretation of technical documentation, system layouts, and diagnostic information related to emerging automotive platforms. It introduces the use of scan tools, digital diagnostic equipment, and simulation software for fault identification and system verification, while reinforcing safe handling procedures for high-voltage and electronically integrated vehicles. Workplace

	organization, occupational safety and health requirements, environmental and sustainability standards, and ethical practices are emphasized to support industry-aligned training environments. Through lectures, demonstrations, simulation activities, and hands-on laboratory tasks, pre-service teachers develop technical fluency, systems thinking, and diagnostic reasoning in modern automotive technologies. Assessment tasks include system analysis activities, technology-focused performance tasks, diagnostic exercises, and microteaching demonstrations that prepare learners for instructional delivery, laboratory supervision, and innovation-driven automotive education aligned with emerging industry trends.
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D.1.2 Electronics Technology

Course Title	Fundamentals of Electronics Technology
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with a solid foundation in the principles of electricity and electronics, enabling them to understand, analyze, and apply fundamental concepts in both theoretical and practical contexts. This covers direct and alternating current (DC/AC) circuits, circuit laws and theorems such as Ohm's, Kirchhoff's, Thevenin's, and Norton's, and the proper use of passive components like resistors, capacitors, and inductors. It also introduces semiconductors and active components such as diodes and transistors with applications in rectification and amplification. Pre-service teachers learn to operate electrical measuring instruments—including multimeters, ammeters, and voltmeters—while observing safety standards and workplace procedures aligned with the Philippine Electronics Code. The course integrates lecture and laboratory work, combining theoretical discussions with circuit-building, fault simulation, and measurement exercises using both physical instruments and simulation software. Emphasis is placed on troubleshooting, safety practices, and developing learner-centered instructional materials that contextualize abstract electrical concepts into practical applications. Assessments include laboratory performance, project outputs, written examinations, and microteaching demonstrations, ensuring that pre-service teachers acquire both technical proficiency and pedagogical competence essential for effective instruction in technology and vocational education.
Course Title	Electronic Circuits and Devices
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with competencies in semiconductor device applications, enabling them to analyze, construct, and troubleshoot electronic circuits that integrate both active and passive

components while developing pedagogical skills for teaching electronics at the secondary and post-secondary levels. This covers semiconductor theory and applications of diodes, rectifiers, transistors (BJT and FET), amplifiers, thyristors, and regulated power supplies. Emphasis is placed on circuit analysis, performance testing, and troubleshooting techniques used in consumer and industrial electronic systems. The course also highlights practical applications such as power supplies, amplification circuits, and switching systems, with attention to safety standards, energy efficiency, and low-power device technologies. Pre-service teachers design and implement competency-based instructional materials that translate complex electronic principles into learner-centered lessons. Delivered through a lecture-laboratory format, the course integrates theoretical instruction with extensive laboratory work, circuit assembly, performance testing, simulation, and project-based design. Assessments include laboratory performance, circuit design and assembly outputs, troubleshooting reports, written examinations, microteaching demonstrations, and instructional module preparation, ensuring that pre-service teachers attain both technical expertise and pedagogical readiness in electronics education.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Digital Electronics and Logic Circuits
 4 units
 102-108 hours

This course equips pre-service teachers with the competencies to apply digital principles in designing, testing, and troubleshooting logic circuits, while developing instructional strategies for teaching technology and digital systems. This covers the fundamentals of number systems and codes, Boolean algebra, and the design and analysis of logic gates, flip-flops, counters, registers, multiplexers, decoders, and encoders. It also explores combinational and sequential circuits with applications in digital system design, microprocessors, automation, and mechatronics. Emphasis is placed on logical reasoning, circuit troubleshooting, and the integration of digital electronics in modern control and embedded systems. The course combines lectures with intensive laboratory work, enabling pre-service teachers to gain both theoretical understanding and practical skills through circuit simulation, breadboard prototyping, construction, and testing. Project-based learning and microteaching sessions help pre-service teachers translate complex digital concepts into learner-centered instruction. Assessments include laboratory performance, simulation outputs, circuit design projects, fault analysis reports, written examinations, instructional module

preparation, and microteaching demonstrations, ensuring that pre-service teachers develop both technical proficiency and pedagogical competence for classroom and industry applications.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Electronic Instruments and Measurements

4 units
 102-108 hours

This course equips pre-service teachers with the competencies, knowledge, and technical skills necessary to effectively use, calibrate, maintain, and troubleshoot a wide range of electronic measuring instruments while ensuring precision, reliability, and safety in laboratory and field applications. It prepares them to handle measurement systems in accordance with industry standards and to translate these concepts into meaningful instructional experiences for technology and vocational learners. The course covers the theory, operation, and application of voltmeters, ammeters, ohmmeters, multimeters, oscilloscopes, function generators, frequency counters, and spectrum analyzers. It emphasizes calibration procedures, error analysis, measurement accuracy, and preventive maintenance aligned with international standards and occupational safety protocols. Through a lecture–laboratory approach, pre-service teachers engage in calibration exercises, diagnostic testing, and performance evaluation of instruments, complemented by simulations and real-world measurement activities. They also design instructional materials and microteaching demonstrations that connect technical measurement practices with effective pedagogy. Assessment focuses on laboratory performance, calibration and troubleshooting reports, experimental design, and instructional outputs that demonstrate both technical mastery and the ability to teach measurement principles in diverse TVET contexts.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Consumer Electronics

4 units
 102-108 hours

This course equips pre-service teachers with the competencies to assemble, disassemble, service, and repair consumer and industrial electronic products while developing pedagogical skills for teaching electronics servicing in technology and vocational education. This covers printed circuit board (PCB) soldering and desoldering techniques, assembly and disassembly procedures, circuit testing and troubleshooting, and replacement of defective components. Emphasis is placed on quality assurance, workplace safety, and sustainability practices such as proper e-waste management and component recycling. The course integrates technical

proficiency with instructional design, enabling pre-service teachers to transform servicing practices into competency-based, learner-centered instructional modules aligned with industry standards. Delivered through an intensive hands-on lecture–laboratory format, it combines technical training with pedagogical development. Pre-service teachers engage in product assembly and repair projects, diagnostic exercises, and sustainability-focused tasks that promote responsible practices in electronics servicing. They also design contextualized lesson plans and conduct microteaching sessions simulating classroom instruction. Assessment includes laboratory performance, repair project outputs, quality assurance documentation, troubleshooting reports, instructional material development, and microteaching demonstrations, ensuring that pre-service teachers achieve both industry readiness and pedagogical competence.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Computer Systems and Networking

4 units
 102-108 hours

This course equips pre-service teachers with the competencies in computer systems servicing and networking to install, configure, and troubleshoot personal computers, peripherals, and basic networking systems, while developing the pedagogical skills to teach computer servicing in technology and vocational education. This covers computer hardware assembly and disassembly, installation and configuration of operating systems and application software, software and hardware troubleshooting, and preventive maintenance practices. It also includes network cabling, local area network (LAN) setup, IP addressing, and configuration of basic network devices. Emphasis is placed on safety procedures, accurate documentation of servicing tasks, and adherence to industry standards for computer systems servicing. The course integrates technical mastery with instructional design, enabling pre-service teachers to create contextualized teaching materials and competency-based learning modules for classroom and training settings. Delivered through a lab-intensive lecture–laboratory format, it emphasizes experiential learning through hands-on servicing, configuration projects, and troubleshooting drills. Assessment includes laboratory performance, configuration and repair projects, network troubleshooting exercises, project documentation, lesson plan development, and microteaching demonstrations, ensuring that pre-service teachers acquire both technical expertise and pedagogical readiness for effective technology education.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Communication Electronics Systems

4 units
102-108 hours

This course equips pre-service teachers with the technical competence to analyze, install, and troubleshoot electronic communication systems while developing pedagogical skills to teach communication technologies in technology and vocational education. This covers the principles of signal transmission and reception, modulation and demodulation techniques (AM, FM, PM, and digital), and the design and operation of antennas and transmission lines. It also includes fiber optics communication, satellite systems, microwave links, and modern wireless technologies such as mobile networks, Wi-Fi, and Bluetooth. Emphasis is placed on telecom servicing standards, system maintenance, safety protocols, and the integration of emerging communication technologies. The course trains pre-service teachers to contextualize complex technical concepts into competency-based learning modules suitable for classroom and laboratory instruction. Delivered through a lecture-laboratory format, it combines theoretical instruction with practical servicing and testing activities, including circuit simulations, antenna alignment, and small-scale fiber optics and wireless configurations. Assessments include laboratory performance, troubleshooting exercises, project documentation, written examinations, and microteaching sessions, ensuring that pre-service teachers achieve both technical proficiency and pedagogical competence in the field of communication technology.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Audio-Video and Consumer Electronics Sys

4 units
102-108 hours

This course equips pre-service teachers with the competencies to service, repair, and maintain consumer and multimedia electronic systems while developing the pedagogical skills to teach audio-video technology concepts in technology and vocational education. This covers audio systems such as amplifiers, speakers, and digital sound processors; video display devices including monitors, projectors, smart TVs, and multimedia players; and ICT-integrated applications for digital connectivity. Emphasis is placed on system installation, troubleshooting, repair, and integration, including digital sound processing, HDMI/AV signal management, and smart device networking. The course also promotes adherence to industry servicing standards and sustainability practices such as proper e-waste management. The pedagogical component enables pre-service teachers to

design contextualized lesson plans and instructional modules for consumer electronics and multimedia technology. Delivered through a lecture–laboratory format, it integrates theoretical learning with intensive practical application. Activities include diagnosing and repairing defective audio-video equipment, servicing smart devices, and integrating multimedia systems with ICT platforms. Assessment includes laboratory performance, project-based servicing tasks, troubleshooting demonstrations, lesson plan preparation, and microteaching sessions, ensuring pre-service teachers attain both technical proficiency and pedagogical competence.

Course Title

Programmable Logic Controllers (PLC) and Industrial Automation

Course Credits

4 units

Contact Hours

102-108 hours

Prerequisite/s

Description

This course equips pre-service teachers with the competencies to design, program, and troubleshoot programmable logic controller (PLC)–based systems for industrial automation while developing pedagogical skills for teaching automation concepts in technology and vocational education. This covers the principles of digital logic and ladder diagrams, PLC architecture and programming fundamentals, and the integration of sensors, actuators, and relays in industrial control systems. It includes PLC installation, wiring, input/output interfacing, and programming instructions for operating motors, conveyors, and automated processes. The course also explores troubleshooting techniques, adherence to safety standards, and the integration of PLCs with advanced automation technologies such as Human–Machine Interfaces (HMIs) and Supervisory Control and Data Acquisition (SCADA) systems. The pedagogical component focuses on developing teaching modules and strategies for contextualizing automation concepts in classroom and laboratory settings. Delivered through a lecture–laboratory format, it emphasizes experiential learning through PLC programming, process simulation, and project-based automation design. Assessments include programming demonstrations, troubleshooting tasks, automation project outputs, written examinations, lesson plan development, and microteaching sessions, ensuring that pre-service teachers acquire both technical expertise and pedagogical readiness for effective instruction in industrial automation.

Course Title

Smart Electronics and IoT Applications

Course Credits

4 units

Contact Hours

102-108 hours

Prerequisite/s

Description

This course equips pre-service teachers with the competencies to design, program, and

integrate Internet of Things (IoT) technologies and smart electronic systems in both practical applications and educational contexts. This covers the design and application of IoT devices and microcontrollers such as Arduino and Raspberry Pi, including the use of smart sensors, actuators, and wireless communication protocols like but not limited to Wi-Fi, Bluetooth, Zigbee, and LoRa. Emphasis is placed on developing smart systems for applications such as home automation, energy monitoring, and renewable energy integration (e.g., solar-powered IoT devices), while addressing issues of cybersecurity, ethical technology use, and sustainability. The course fosters innovation and applied research through prototyping and community-oriented projects that showcase the transformative role of IoT in education and industry. Delivered through a project-based learning approach, it emphasizes hands-on microcontroller programming, IoT prototyping, and system integration. Pre-service teachers work individually and collaboratively to design functional IoT systems and prepare instructional modules that make advanced technologies accessible to learners. Assessments include prototype development, project presentations, sustainability-focused outputs, instructional module design, and microteaching demonstrations, ensuring pre-service teachers gain both technical expertise and pedagogical readiness for future-ready learning environments.

D.1.3 Electrical Technology

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Fundamentals of Electricity

4 units
 102-108 hours

This course equips pre-service teachers with a strong foundation in the fundamental principles of electricity that underpin advanced studies in electrical technology. It introduces essential electrical quantities and units such as current, voltage, resistance, power, and energy, and develops students' understanding of key electrical laws including Ohm's Law and Kirchhoff's Laws for the analysis of basic circuits. The course primarily focuses on direct current (DC) circuits as the basis for understanding electrical behavior and circuit operation. To provide a broader perspective on electrical systems, the course also includes a brief introduction to alternating current (AC), highlighting its fundamental characteristics, waveform behavior, and key differences from DC. This introductory exposure to AC concepts helps prepare students for more advanced electrical and electronics courses and contributes to a more comprehensive understanding of electricity as applied in real-world electrical systems. The course introduces the proper selection, use, and maintenance of measuring instruments such

as ammeters, voltmeters, wattmeters, and multimeters, emphasizing accuracy in electrical measurement and system testing. Emphasis is placed on safety standards, and workplace procedures aligned occupational health and safety practices. Delivered through a lecture–laboratory format with balanced theory and hands-on practice, the course includes circuit-building, measurement exercises, and fault-simulation activities. Assessment focuses on performance-based demonstrations, safety and measurement drills, project outputs, and written tasks that measure mastery of electrical concepts, precision in measurement, and compliance with safety standards in electrical technology applications.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Electrical Instruments and Measurements
 4 units
 102-108 hours

This course equips pre-service teachers with the knowledge and skills to properly select, use, and maintain electrical measuring instruments for accurate testing, calibration, and analysis of electrical systems, while developing pedagogical competence for teaching measurement concepts in technology and vocational education. This covers the principles, functions, and applications of analog and digital instruments such as multimeters, ammeters, voltmeters, wattmeters, ohmmeters, clamp meters, and oscilloscopes. It includes the measurement of current, voltage, resistance, power, energy, and frequency in AC and DC circuits, as well as calibration methods, error analysis, and troubleshooting of instrumentation systems. Emphasis is placed on safety practices, accuracy standards, and the integration of modern testing technologies with digital and smart systems. Delivered through a lecture–laboratory format, it combines theoretical discussions with extensive hands-on activities such as calibration, error detection, diagnostic testing, and laboratory experiments. To ensure holistic competency development, assessments encompass laboratory performance, calibration projects, troubleshooting demonstrations, error analysis reports, lesson plan development, and microteaching sessions, ensuring both technical proficiency and pedagogical readiness in electrical instrumentation.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Electrical and Electronics Circuits and Devices
 4 units
 102-108 hours

This course equips pre-service teachers with the competencies to analyze, design, and troubleshoot electrical and electronic circuits using both traditional and modern tools. This covers the fundamentals of series-parallel

circuits, resistors, capacitors, and inductors, as well as circuit analysis methods such as Ohm's Law, Kirchhoff's Laws, and Thevenin's and Norton's Theorems. It also introduces semiconductors and electronic devices, including diodes, transistors, and basic integrated circuits, emphasizing their applications in rectification, amplification, and switching. Pre-service teachers learn to construct, test, and analyze both AC and DC circuits using analog and digital measuring instruments and simulation software. Emphasis is placed on circuit troubleshooting, adherence to safety standards, and the development of competency-based instructional materials that integrate circuit principles into technology and vocational education. Delivered through a lecture–laboratory format, the course combines theory with extensive hands-on application through circuit-building exercises, fault simulations, and project-based learning. To measure mastery and teaching competence, assessments include laboratory performance, practical demonstrations, project outputs, written evaluations, instructional module preparation, and microteaching sessions that strengthen the pre-service teachers' technical expertise and instructional readiness in circuit analysis and design.

Course Title	Electrical Wiring System and Design
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the competencies to design, lay out, install, and supervise residential, commercial, and small-scale industrial electrical systems in full compliance with the Philippine Electrical Code (PEC) and industry safety standards. This covers electrical plan design, load computation, circuit layout, wiring installation, troubleshooting, and system maintenance aligned with national qualifications for distribution line construction and smart building automation. It integrates traditional electrical installation practices with emerging technologies such as IoT-enabled systems, structured cabling, and energy-efficient automation, enabling pre-service teachers to handle both conventional and smart wiring systems. Emphasis is placed on safety, energy management, and sustainable practices, including renewable energy integration and smart control protocols such as KNX, BACnet, Zigbee, and Wi-Fi. Delivered through a lecture–laboratory format, the course blends theory with hands-on wiring, project-based installations, and simulations of automated systems. Pre-service teachers design PEC-compliant electrical plans, implement smart automation projects, and develop competency-based instructional modules that contextualize these technologies for classroom and workshop instruction. Assessment includes electrical plan outputs, troubleshooting exercises, automation projects, and microteaching demonstrations, ensuring technical mastery and pedagogical readiness for effective instruction in electrical installation and smart building systems.

Course Title	Solar PV Systems Installation, Service, and Design
Course Credits	4 units
Contact Hours	102-108 hours

Prerequisite/s	
Description	This course equips pre-service teachers with the competencies to design, install, test, and commission photovoltaic (PV) systems for residential, commercial, and community applications while developing the pedagogical skills to teach renewable energy concepts in technology and vocational education. This covers site assessment, load analysis, system design, selection of PV modules, inverters, and batteries, and installation of stand-alone and grid-tied solar systems compliant with the Philippine Electrical Code (PEC), International Electrotechnical Commission (IEC) standards, and occupational safety protocols. Emphasis is placed on system testing, commissioning, troubleshooting, and sustainability practices such as energy efficiency and net metering integration. The course also explores hybrid and off-grid systems and their role in sustainable community development. Delivered through a field-based and laboratory-centered format, it integrates theoretical instruction with hands-on installation, wiring, testing, and performance evaluation of PV systems. Pre-service teachers prepare contextualized lesson plans, competency-based learning materials, and microteaching demonstrations that translate solar PV concepts into classroom instruction. Upon completing the course, pre-service teachers are expected to demonstrate technical mastery and educational readiness through system installation and testing tasks, troubleshooting exercises, sustainability-focused projects, technical documentation, and pedagogical outputs in solar PV system design and implementation.

Course Title	Fire Detection and Alarm Systems (FDAS)
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the competencies to design, install, program, and maintain fire detection and alarm systems (FDAS) in compliance with local and international safety standards. This covers the principles, components, and applications of FDAS in residential, commercial, and industrial facilities, including detectors, manual call points, fire alarm control panels, notification appliances, and wiring methods for initiating and signaling circuits. Pre-service teachers learn to install and configure both addressable and conventional systems, integrate FDAS with building safety controls such as ventilation and suppression systems, and ensure compliance with the Philippine Electrical Code, Philippine Electronics Code Book II, and NFPA 72. Emphasis is placed on testing, commissioning, preventive maintenance, and troubleshooting for system reliability and safety. Delivered through a lecture-laboratory format, the course combines theory with hands-on installation, system configuration, and simulation of emergency scenarios. Pre-service teachers also develop contextualized lesson plans and instructional materials that embed fire safety and prevention concepts into TVET instruction. By the end of the course, pre-service teachers will have developed both technical and instructional competence through laboratory activities, installation and troubleshooting projects, technical documentation, and microteaching sessions focused on fire detection and alarm systems.

Course Title	Electrical Machines and Controls
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the competencies to operate, test, maintain, and troubleshoot electrical machines and motor control systems while developing pedagogical skills to

	teach these concepts in technology and vocational education. This covers the construction, principles, performance, and applications of DC motors and generators, single-phase and three-phase AC motors, synchronous machines, induction motors, and transformers. Emphasis is placed on industrial and commercial applications, energy efficiency, preventive maintenance, and fault diagnosis. For the motor control component, pre-service teachers study the design and operation of motor starters, contactors, relays, protective devices, and control circuits such as forward–reverse, star–delta, jogging, and automatic restart systems, including modern control technologies like variable frequency drives (VFDs) and soft starters. The course is delivered through a lecture–laboratory format integrating theory with hands-on practice, including machine operation, transformer testing, control wiring, and troubleshooting exercises. Pre-service teachers also develop competency-based learning modules, contextualized lesson plans, and microteaching demonstrations that translate technical content into learner-centered instruction. Assessment includes laboratory performance, project outputs, troubleshooting drills, maintenance logs, instructional materials, and teaching demonstrations, ensuring technical mastery, safety awareness, and pedagogical competence in electrical machines and motor control systems.
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Course Title	Electrical Power Generation, Transmission, and Distribution
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the competencies to design, analyze, and apply principles of electrical power systems across generation, transmission, and distribution, while developing the pedagogical skills to teach these concepts effectively in technology and vocational education. This covers power generation from thermal, hydro, diesel, solar PV, wind, and biomass sources, emphasizing sustainability and renewable integration. It includes transmission and distribution systems—substations, overhead and underground lines, feeders, and secondary networks—with focus on load management, protection, reliability, and efficiency. The course integrates competencies in distribution line construction such as pole climbing, line installation, transformer mounting, maintenance, and fault diagnosis in compliance with the Philippine Electrical Code (PEC), IEC standards, and safety protocols. Advanced topics include distributed generation, hybrid systems, net metering, and smart grid technologies. Delivered through a lecture–laboratory and fieldwork format, it combines theory with hands-on training, simulation, and plant or site exposure. Pre-service teachers engage in pole climbing drills, installation projects, fault testing, and grid modeling, alongside the development of learning materials, lesson plans, and microteaching demonstrations. At the culmination of the course, pre-service teachers exhibit mastery through line construction and simulation tasks, project implementation, maintenance documentation, and teaching demonstrations that integrate both technical precision and pedagogical depth in electrical power systems.

Course Title	Electrical Preventive Maintenance and Repair
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the competencies to perform preventive maintenance, diagnose faults, and repair electrical appliances while integrating sustainable and

	energy-efficient practices aligned with industry standards and future-ready instruction. This covers the servicing of lighting systems, small motors, refrigerators, and other domestic and commercial electrical devices, emphasizing troubleshooting, quality assurance, and adherence to safety codes. The course also integrates renewable energy concepts—particularly solar PV applications—and green practices that promote sustainability in appliance servicing and maintenance. Delivered through a lecture–laboratory format, it combines theoretical instruction with intensive workshop practice, including appliance disassembly, wiring, testing, and repair exercises, as well as renewable energy integration projects. Pre-service teachers develop contextualized lesson plans and instructional modules that translate technical repair and maintenance skills into classroom and community learning experiences. Demonstration of learning outcomes is achieved through repair and maintenance tasks, sustainability projects, instructional material preparation, and reflective documentation from industry immersion, enabling pre-service teachers to exhibit both technical mastery and educational readiness for effective electrical servicing instruction.
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Course Title	PLC System and Programming
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the competencies to design, program, and troubleshoot programmable logic controller (PLC)–based systems with a focus on motor control applications for industrial automation international standards. This covers digital logic fundamentals, ladder diagram programming, and the configuration of PLC-controlled motor systems, including start–stop circuits, forward–reverse operations, jogging, star–delta starters, and sequencing controls. Pre-service teachers learn to integrate overload relays, timers, interlocks, and other protective devices while interfacing input and output components such as pushbuttons, contactors, relays, and motor starters. Emphasis is placed on translating traditional hardwired motor control circuits into PLC-based equivalents to promote safety, precision, and efficiency in automation. Delivered through a lecture–laboratory format, the course combines theory with extensive hands-on programming, wiring, simulation, and system testing. Laboratory activities include the design and operation of PLC-controlled multi-motor systems, conveyor processes, and automated machinery. Pre-service teachers also develop learning materials, lesson plans, and microteaching sessions that contextualize PLC-controlled motor concepts for TVET learners. Upon completing the course, pre-service teachers are expected to demonstrate both technical mastery and instructional competence through programming activities, system troubleshooting, project implementation, and pedagogical outputs in industrial automation.

D.1.4 Electromechanical Technology

Course Title	Fundamentals of Electromechanics
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with foundational competencies in electromechanics by integrating essential electrical, electronic, and mechanical principles to develop a holistic technical understanding. This covers the study of DC and AC circuits, application of Ohm's and Kirchhoff's Laws, and the proper use of electrical measuring instruments such as

	ammeters, voltmeters, and multimeters. It introduces mechanical concepts including levers, gears, bearings, and linkages, emphasizing motion, torque, and power transmission in electromechanical systems. Pre-service teachers also explore the integration of sensors and actuators, enabling them to interpret and construct simple electromechanical devices that demonstrate the conversion of electrical energy into mechanical motion. Strong emphasis is placed on compliance with the Philippine Electrical Code (PEC), safety standards, and occupational health practices to ensure responsible laboratory and workshop conduct. Delivered through a lecture–laboratory format, the course combines theory with hands-on activities such as circuit construction, measurement exercises, load testing, and assembly of simple motor-driven systems. Assessment includes laboratory performance, troubleshooting tasks, safety drills, and pedagogical outputs, ensuring both technical mastery and teaching readiness in electromechanics.
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Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Electromechanical Circuits and Control Devi
4 units
102-108 hours

This course equips pre-service teachers with the competencies to analyze, construct, install, and troubleshoot electromechanical circuits and control devices by integrating electrical and electronic principles with mechanical and machine-related applications. It covers the design and analysis of control and power circuits used in electromechanical systems, including series, parallel, and series–parallel configurations, with emphasis on voltage and current distribution, power relationships, and safe system operation. Pre-service teachers study key components and devices used in electromechanical control systems, such as relays, contactors, motor starters, overload and protection devices, sensors, and basic power and interface circuits, together with selected passive and active electronic components required for control and signal conditioning. Applications focus on motor control, machine interlocking, start–stop and sequence control, and basic PLC interfacing for industrial and instructional settings. Troubleshooting procedures are embedded throughout to develop systematic diagnostic and problem-solving skills for electromechanical equipment and installations. Emphasis is placed on occupational safety standards, accurate measurement and testing, interpretation of wiring diagrams and control schematics, and the contextualization of electromechanical circuit concepts into competency-based instruction. Delivered through a lecture–laboratory format, the course integrates theory with hands-on wiring, circuit assembly, device testing, fault analysis, and simulation using digital tools. Pre-service teachers also design learning materials, lesson plans, and microteaching demonstrations that translate electromechanical circuit and control concepts into effective classroom and laboratory

experiences. Competency assessment includes laboratory performance, project implementation, troubleshooting tasks, written evaluations, and instructional material development, highlighting both technical proficiency and teaching competence in electromechanical circuits and control devices.

Course Title	Mechanical Systems and Fabrication Technology
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the competencies to understand, operate, and teach mechanical systems and fabrication processes that support electromechanical assembly. This covers the fundamental elements of mechanical power transmission systems such as belts, chains, gears, and pulleys, emphasizing proper installation, alignment, and maintenance. Pre-service teachers also study bearings, fasteners, and lubrication systems to ensure efficient machine operation, alongside fabrication processes including sheet metal cutting, bending, and welding applications. Emphasis is placed on safety practices, quality assurance, and adherence to industry standards, with fabrication and assembly projects reinforcing practical competence. The course integrates technical and pedagogical training by guiding pre-service teachers in contextualizing fabrication processes into competency-based instructional modules. Delivered through a workshop-based, hands-on format, it combines fabrication projects, system assembly, and safety compliance drills with lesson planning and microteaching demonstrations. Upon completing the course, pre-service teachers are expected to demonstrate both technical proficiency and pedagogical readiness through fabrication and assembly activities, safety compliance, project documentation, and instructional outputs in mechanical systems and fabrication technology.

Course Title	Electromechanical Sensors, Actuators, and Control
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the technical and pedagogical competencies to integrate sensors and actuators into electromechanical systems, combining automation principles with effective instructional strategies. This covers the selection, installation, and troubleshooting of sensing and actuation devices while introducing control concepts such as open-loop, closed-loop, and proportional–integral–derivative (PID) control. Pre-service teachers study common sensors—including proximity, optical, ultrasonic, temperature, and mechanical limit switches—and actuators such as DC and AC motors, stepper motors, solenoids, and pneumatic or hydraulic cylinders. Emphasis is placed on wiring, interfacing, calibration, and ensuring precision and reliability in automated systems. Applications in conveyor systems, temperature regulation, and material handling are explored to connect theory with industrial practice. Delivered through a lecture–laboratory format, the course integrates technical experimentation and project-based learning using Arduino or PLC platforms. Pre-service teachers design and implement automation projects, develop competency-based learning modules (CBLMs), lesson plans, and conduct microteaching demonstrations to translate control concepts into engaging classroom instruction. Demonstration of learning outcomes is achieved through laboratory work,

	automation and control projects, troubleshooting exercises, instructional design tasks, and microteaching activities that integrate technical mastery with pedagogical readiness in electromechanical technology.
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Course Title	Electrical Machines and Drives
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with advanced competencies in the operation, testing, maintenance, and supervision of electrical machines and drives while developing pedagogical skills to teach these concepts in secondary and TVET settings. This covers the construction, principles, and performance characteristics of AC and DC motors, generators, synchronous and induction machines, and power transformers, emphasizing efficiency, reliability, and industrial applications. Pre-service teachers also study variable-speed drive technologies such as variable frequency drives (VFDs), servo motors, and stepper motors, focusing on their role in automation and process control. Preventive maintenance, diagnostic testing, and fault analysis are central components of the course, promoting systematic approaches to troubleshooting and performance optimization. Delivered through a lab-intensive format, it integrates theoretical learning with hands-on exercises in machine operation, load testing, maintenance logging, and repair simulations. Emphasis is placed on safety procedures and adherence to industry standards. Parallel to technical training, pre-service teachers design competency-based learning modules, lesson plans, and microteaching demonstrations that contextualize machine and drive concepts for classroom and workshop instruction. Assessment includes laboratory performance, maintenance and diagnostic reports, project outputs, and instructional materials, ensuring both technical mastery and pedagogical readiness in electrical machines and drive systems.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Hydraulics, Pneumatics, and Fluid Power Sy
4 units
102-108 hours

This course equips pre-service teachers with the knowledge and skills to design, assemble, and troubleshoot hydraulic and pneumatic systems that underpin modern electromechanical and industrial automation. This covers the principles, components, and applications of fluid power systems, including hydraulic pumps, valves, actuators, accumulators, reservoirs, pneumatic compressors, and cylinders used for mechanical motion control. Emphasis is placed on system design, safety, preventive maintenance, and energy efficiency, ensuring technical proficiency and sustainable operation. Pre-service teachers use simulation tools such as FluidSIM to design and test fluid power circuits prior to implementation, reinforcing analytical and troubleshooting skills. Delivered through a hands-on workshop and laboratory format, the course integrates simulation-based learning with practical assembly and testing of fluid power systems, including pneumatic lifting devices, conveyor systems, and hydraulic presses. Parallel to

technical training, pre-service teachers develop instructional modules, lesson plans, and microteaching demonstrations that contextualize fluid power concepts for secondary and TVET instruction. Assessment includes circuit design and troubleshooting tasks, laboratory projects, simulation outputs, instructional material preparation, and teaching demonstrations, ensuring that pre-service teachers achieve both technical mastery and pedagogical readiness in hydraulics and pneumatics.

Course Title	Electrical Motor Control and Industrial Controls
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with advanced competencies in motor control, industrial wiring, and control panel assembly, preparing them for both technical practice and classroom instruction. This covers the design, installation, and troubleshooting of electrical motor control systems, emphasizing manual and automatic operations such as star-delta starting, forward-reverse control, jogging, sequencing, and interlocking circuits. Pre-service teachers learn the selection, installation, and testing of contactors, relays, overloads, timers, and protective devices to ensure system safety and reliability. The course also explores industrial wiring layouts, control panel assembly, preventive maintenance, and fault diagnosis, aligning with advanced Electrical Installation and Maintenance (EIM) competencies. Delivered through a hands-on, lab-intensive format, it integrates simulation-based learning and real-world problem-solving activities. Pre-service teachers design and assemble control panels, perform wiring and load testing, and conduct troubleshooting drills using industrial case studies. Parallel to technical practice, they develop lesson plans, learning materials (CBLMs), and microteaching demonstrations that contextualize motor control and automation for learners. Assessment includes laboratory performance, control system projects, troubleshooting exercises, maintenance reports, and instructional outputs, ensuring both technical mastery and pedagogical readiness for effective instruction in motor and industrial control systems.

Course Title	Electromechanical PLC-Based Automation and Control Systems
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the competencies to design, program, integrate, and troubleshoot PLC-based automation and control systems for electromechanical applications, while strengthening their pedagogical capability to teach automation and control in technology and vocational education. It covers PLC hardware configuration, ladder logic programming, and input/output interfacing for the control of electromechanical devices and systems, including motors, motor starters, sensors, relays, solenoid valves, and other actuators commonly used in industrial machinery. Emphasis is placed on the development of control strategies for motor control, machine sequencing, conveyor and material-handling systems, and safety and interlocking circuits, integrating electrical and electronic control with mechanical equipment and drive mechanisms. The course also introduces the use of Human-Machine Interfaces

	(HMI) and basic Supervisory Control and Data Acquisition (SCADA) concepts for monitoring and supervising electromechanical processes. Preventive maintenance, fault diagnosis, and systematic troubleshooting of PLC-controlled electromechanical systems are emphasized to ensure operational reliability and compliance with safety standards. Delivered through a lecture–laboratory format, the course integrates theory with hands-on PLC programming, simulation, panel wiring, device interfacing, and system integration using both physical PLC units and industrial software tools. Pre-service teachers design and implement automation projects focused on electromechanical machines and processes and develop learning modules, lesson plans, and microteaching demonstrations that contextualize PLC-based automation and control for classroom and laboratory instruction. Assessment includes programming and integration tasks, troubleshooting exercises, automation projects, and instructional materials, ensuring both technical competence and pedagogical readiness in electromechanical PLC-based automation and control systems.
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Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Mechatronics Systems Integration

4 units
 102-108 hours

This course equips pre-service teachers with advanced competencies in integrating electrical, electronic, mechanical, and control subsystems into complete mechatronic solutions, aligning with standards in Mechatronics. This covers system-level design, integration of electrical machines, PLCs, sensors, actuators, and fluid power systems, and synchronization of hardware and software in automated processes. Emphasis is placed on system troubleshooting, documentation, and the application of predictive maintenance technologies and SCADA systems within smart manufacturing and Industry 4.0 contexts. Delivered as a capstone, project-based course, it synthesizes prior learning in electromechanical and automation subjects, guiding pre-service teachers to design, assemble, test, and commission integrated systems such as automated conveyors, robotic arms, and smart monitoring setups. The course also develops pedagogical competence by training pre-service teachers to translate mechatronic integration into competency-based instructional modules, lesson plans, and microteaching demonstrations that connect industrial practices with classroom instruction. Safety, sustainability, collaboration, and technical reporting are emphasized throughout. By the end of the course, pre-service teachers will have developed both technical and instructional competence through system integration projects, troubleshooting exercises, preparation of technical documentation, and teaching-related outputs that enhance their ability to deliver instruction in mechatronics and automation.

Course Title
Course Credits

Smart Systems, Robotics, and IoT Applicati

4 units

Contact Hours
Prerequisite/s
Description

102-108 hours

This course equips pre-service teachers with future-ready competencies in robotics, Internet of Things (IoT) systems, and smart technologies, preparing them to meet the demands of Industry 4.0 and emerging digital innovations. This covers the principles and applications of robotics, IoT, and automation, integrating technical proficiency with pedagogical strategies for competency-based instruction. Pre-service teachers study robotics fundamentals such as kinematics, motion control, and sensor–actuator integration while using microcontroller platforms like Arduino and Raspberry Pi for prototyping. They also explore IoT communication protocols—including Wi-Fi, Zigbee, LoRa, and MQTT—to enable connectivity and data exchange between devices. Applications in smart agriculture, renewable energy systems, home automation, and energy monitoring are emphasized to promote sustainability and relevance to industry practice. The course highlights cybersecurity and ethical use of smart technologies to ensure secure and responsible implementation. Delivered through project-based and innovation-driven learning, it engages pre-service teachers in designing, building, and testing robotics and IoT-enabled prototypes, as well as preparing learning materials, lesson plans, and microteaching sessions. Upon completing the course, pre-service teachers are expected to demonstrate both technical mastery and pedagogical readiness through prototype development, research presentations, troubleshooting activities, sustainability-oriented projects, and instructional outputs in smart systems, robotics, and IoT applications.

D.1.5 Biomedical Technology

Course Title	Foundations of Biomedical Technology
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course prepares pre-service teachers to develop technical and pedagogical competencies in biomedical technology. It covers the installation, preventive and corrective maintenance, repair, and assessment of biomedical equipment, emphasizing ethical practice, workplace standards, and safety compliance. Learners engage in hands-on activities simulating workplace conditions, including equipment handling, troubleshooting, and maintenance procedures. The course also develops foundational digital literacy for biomedical documentation, data handling, and professional communication. Through lectures, demonstrations, case analyses, and reflective activities, learners cultivate professional awareness, interdisciplinary collaboration, and lifelong learning. By the end of the course, pre-service teachers will be able to apply biomedical technology practices and design learner-centered, outcomes-based instructional activities that promote technical mastery, safety, and effective teaching.

Course Title	Human Biology and Physics for Biomedical Systems
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the foundational scientific knowledge needed to relate human biological structures and physiological processes to the physical principles underlying biomedical equipment. It covers the major organ systems of the human body, their associated functions, and key physics concepts such as force, motion, energy, electricity, magnetism, and wave behavior as they apply to biomedical technology. The course emphasizes the direct connection between scientific theory and practical device application, enabling pre-service teachers to explain how biomedical instruments monitor, measure, or support physiological functions. Learning activities include guided lectures, model-based explorations, laboratory demonstrations, and simple experimental investigations that illustrate scientific concepts. Pre-service teachers analyze anatomical diagrams, interpret physiological data, and observe how physics principles influence device performance, safety, and effectiveness in healthcare settings. By the end of the course, they demonstrate the ability to explain biological and physical principles clearly to learners, interpret basic biomedical data, and apply scientific reasoning to real-world biomedical device scenarios.

Course Title	Electrical and Circuit Fundamentals
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	The course is intended to develop the ability of pre-service teachers to apply electrical principles to analyze and troubleshoot biomedical circuits, with emphasis on measurements and safety practices. The course is delivered through lectures, laboratory demonstrations, and problem-solving activities. Pre-service teachers will complete circuit analysis tasks, lab reports, and troubleshooting exercises.

Course Title	Digital Systems and Networking
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	The course is designed to train pre-service teachers to analyze, design, and troubleshoot digital and network systems essential for biomedical device integration. The course is organized around lectures, lab-based design activities, and networking configurations. Pre-service teachers will perform simulations, wiring exercises, and group troubleshooting projects.

Course Title	Applied Electronics for Biomedical Systems
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	

Description

The course is intended to build competence among pre-service teachers in operating, designing, and applying electronic devices in biomedical contexts. The course is structured with lectures, laboratory work, and design exercises. Pre-service teachers will perform experiments, schematic analysis, and application reports.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description**Signal Analysis and Processing**

4 units
102-108 hours

This course equips pre-service teachers with the knowledge and skills needed to analyze, interpret, and process biomedical signals for diagnostic and monitoring applications. It covers the fundamental characteristics of physiological signals such as ECG, EMG, EEG, and respiratory waveforms, as well as essential signal processing techniques including sampling, filtering, amplification, noise reduction, and feature extraction. The course emphasizes the relationship between clean, accurate signals and reliable clinical decision-making, helping pre-service teachers recognize the implications of signal distortion and system error. Through software-based laboratory work, waveform interpretation activities, and case-based discussions, pre-service teachers develop accuracy in observing, processing, and evaluating biomedical signals. They also learn to communicate signal interpretations clearly to learners and other professionals. By the end of the course, pre-service teachers demonstrate the ability to apply signal processing methods, interpret physiological data, troubleshoot common signal artifacts, and present biomedical signal concepts in instructional formats that support learner understanding in healthcare and educational settings.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description**Instrumentation and Control Systems**

4 units
102-108 hours

This course equips pre-service teachers with an understanding of the mechanisms that enable biomedical devices to sense, measure, regulate, and maintain physiological and operational parameters. It covers the principles and applications of sensors, transducers, data acquisition systems, and feedback control mechanisms used to ensure accuracy, stability, and safety in biomedical instrumentation. The course emphasizes systems thinking by showing how device components interact to detect changes, adjust system outputs, and sustain reliable performance. Pre-service teachers engage in laboratory activities involving sensor calibration, signal measurement, control circuit testing, and case analyses of real biomedical

systems. They also learn procedures for verifying device performance and documenting control system outcomes.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Biomedical Instrumentation I

4 units
102-108 hours

This course equips pre-service teachers with foundational knowledge and practical skills in the operation, interpretation, and troubleshooting of common biomedical instruments used for patient monitoring. It covers the functional principles, measurement features, and safety considerations of key devices such as electrocardiographs, blood pressure monitors, pulse oximeters, and temperature measurement tools. The course emphasizes accurate data interpretation, proper device handling, safety protocols, and maintenance procedures to ensure reliable instrument performance. Pre-service teachers engage in laboratory sessions, device simulations, equipment inspections, and case-based troubleshooting tasks to reinforce hands-on proficiency. They also practice explaining device functions and readings in clear instructional terms appropriate for diverse learners in biomedical education settings. By the end of the course, pre-service teachers demonstrate the ability to operate monitoring instruments, recognize normal and abnormal physiological readings, identify common operating errors, and apply safety standards. They also show readiness to guide learners in understanding the basic principles and safe use of biomedical monitoring equipment.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Biomedical Instrumentation II

4 units
102-108 hours

This course equips pre-service teachers with advanced knowledge and hands-on competencies in operating, maintaining, and troubleshooting life-support and diagnostic imaging devices. It covers the functional principles, system components, and safety standards of equipment such as ventilators, infusion pumps, defibrillators, dialysis machines, ultrasound systems, and other clinical support technologies. The course emphasizes safe operation, performance evaluation, equipment maintenance, regulatory compliance, and the interpretation of device outputs for clinical relevance. Pre-service teachers participate in laboratory demonstrations, scenario-based evaluations, performance checks, and technical problem-solving exercises that simulate real clinical environments. They also learn to communicate device operations and troubleshooting procedures effectively when teaching learners in biomedical educational

settings. By the end of the course, pre-service teachers demonstrate proficiency in evaluating equipment performance, identifying system faults, applying safety protocols, and supporting decision-making regarding biomedical device use in patient care. They also develop the confidence to guide learners in understanding and applying advanced instrumentation concepts.

D.1.6 Machining Technology

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Metrology and Blueprint Reading

4 units
 102-108 hours

This course equips pre-service teachers with the foundational competencies of Machining and Metal Fabrication Technology, including measurement, inspection, and blueprint reading. It covers global measurement systems and standards, application of tolerances and calibration, and proper selection and utilization of precision tools such as vernier instruments, micrometers, gauges, and angular measuring tools to ensure accuracy in machining operations. To deepen appreciation and application of measurement, pre-service teachers engage with the interpretation of mechanical blueprint conventions, including symbols, dimensions, tolerances, and bill of materials. Through lectures, demonstrations, and active participation in real-world exercises, pre-service teachers gain the technical fluency and spatial reasoning necessary for precise assembly, fabrication, and machine operations. Assessment tasks include written tests on blueprint reading and practical measurement activities that prepare pre-service teachers for machining work supporting precision manufacturing, equipment maintenance, and design across metalworking and industrial production settings.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Machine Elements and Maintenance

4 units
 102-108 hours

This course equips pre-service teachers with foundational and applied competencies in machine elements and maintenance within the context of machining technology. It emphasizes the functional analysis of essential machine components such as couplings, bearings, shafts, mechanical drive systems, fasteners, and seals, including their selection, assembly, and installation in typical machineries and production systems. The course examines material properties and operating conditions that influence machine performance, chip formation, tool wear, and other machining parameters. Pre-service teachers also develop essential skills in

preventive and corrective maintenance, including inspection, lubrication practices, fault identification, and safe disassembly and reassembly of machine components. Through lectures, demonstrations, and hands-on laboratory activities, learners acquire the technical fluency and diagnostic reasoning necessary for maintaining machine reliability and operational efficiency. Assessment tasks include, component identification, selection, and practical maintenance activities that prepare learners for instructional delivery, equipment upkeep, and machining operations.

Course Title

Conventional Lathe and Cylindrical Grinding Operations

Course Credits

4 units

Contact Hours

102-108 hours

Prerequisite/s

Description

This course equips pre-service teachers with the essential competencies for producing cylindrical components using conventional lathe machines and cylindrical grinding equipment. It covers the proper selection and setup of cutting tools, grinding wheels, workholding devices, and machining parameters for operations such as turning, facing, drilling, boring, taper turning, threading, and both external and internal cylindrical grinding. Through a combination of lectures, demonstrations, and hands-on laboratory exercises, learners develop technical and procedural fluency, including machine component alignment, achievement of dimensional and surface finish requirements, and the application of mensuration techniques necessary for safe, efficient, and industry standard machining operations. Competency is demonstrated through written assessments and actual machining of workpieces based on working drawings. These activities prepare pre-service teachers for effective instructional delivery and for performing precision manufacturing tasks.

Course Title

Conventional Milling and Surface Grinding Operations

Course Credits

4 units

Contact Hours

102-108 hours

Prerequisite/s

Description

This course equips pre-service teachers with the essential competencies for operating milling machines and surface grinding equipment. It covers the selection and setup of milling cutters, tool holders, fixtures, abrasive wheels, and other machining parameters for operations such as face milling, slotting, contouring, keyway cutting, indexing and surface grinding. Through a combination of lectures, demonstrations, and hands-on laboratory exercises, learners develop technical and procedural fluency, including machine and workpiece alignment, achievement of dimensional and surface finish requirements, and the application of

mensuration and quality inspection techniques necessary for safe, efficient, and industry standard machining operations. Competency is demonstrated through written assessments and the machining of workpieces based on working drawings. These activities prepare pre-service teachers for effective instructional delivery and for performing precision manufacturing tasks.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Computer-Aided Design and Manufacturing
4 units
102-108 hours

This course equips pre-service teachers with foundational competencies in computer-aided design and manufacturing (CAD/CAM) for machining and production applications. It covers the interpretation and creation of two-dimensional engineering drawings, three-dimensional mechanical models, and the generation of basic cnc programs for manufacturing processes. Learners are introduced to the digital workflow from design to production, including file management, CAM simulation, and verification of machining operations. Through lectures, guided demonstrations, and computer-based laboratory activities, learners develop technical fluency in digital modeling, design communication, and basic manufacturing automation aligned with modern industry practices. Competency is demonstrated through digital design projects, CNC program generation exercises, and simulation-based manufacturing outputs. These activities prepare pre-service teachers for effective CAD/CAM instruction and for participation in technology-driven production environments.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Advance Milling with Gear Cutting Operation
4 units
102-108 hours

This course equips pre-service teachers with advanced competencies in milling processes with emphasis on gear cutting operations for mechanical transmission components. It focuses on the interpretation of gear drawings, basic gear geometry, cutter selection, indexing methods, and appropriate machining parameters for spur and helical gear forms. The course develops learners' ability to set up milling machines for gear cutting, perform accurate indexing, and apply inspection techniques to verify tooth profile, pitch, and dimensional accuracy. Through lectures, demonstrations, and hands-on laboratory activities, pre-service teachers acquire advanced technical fluency and process control skills essential for producing precision gears. Assessment tasks include gear drawing interpretation, machining process planning, and practical gear cutting outputs that prepare learners for instructional roles and

	industry-aligned advanced machining applications.
Course Title	CNC Lathe Operation
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with foundational and applied competencies in performing CNC lathe operations. It covers writing basic CNC programs, setting up workpieces and cutting tools, and executing CNC machining processes such as facing, straight and taper turning, contour turning, recessing, shoulder cutting, grooving, filleting and chamfering, drilling, boring, thread cutting, and parting-off. Through lectures, demonstrations, simulation activities, and hands-on CNC lathe operation, learners develop technical fluency in CNC workflows, including cutting parameter selection, workholding methods, and quality control procedures required for safe and efficient machining practices. Competency is demonstrated through CNC program interpretation and creation, as well as the actual operation of CNC lathe equipment. These activities prepare pre-service teachers for technology-enhanced machining instruction and for participation in modern manufacturing operations.
Course Title	CNC Milling Machine Operation
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with foundational and applied competencies in performing CNC milling operations. It covers writing basic CNC programs, setting up workpieces and cutting tools, and executing CNC machining processes such as drilling, boring, milling slots, serrations, contour, and circular and rectangular pockets, tapping, engraving, and chamfering. Through lectures, demonstrations, simulation activities, and hands-on CNC milling operation, learners develop technical fluency in CNC workflows, including cutting parameter selection, workholding methods, and quality control procedures required for safe and efficient machining practices. Competency is demonstrated through CNC program interpretation and creation, as well as the actual operation of CNC milling equipment. These activities prepare pre-service teachers for technology-enhanced machining instruction and for participation in modern manufacturing operations.
Course Title	Tool and Die Design
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with

foundational competencies in tool and die design for manufacturing and production support systems. It covers the knowledge, skills, and values required in designing, machining, assembling, and testing die components, with emphasis on material behavior, dimensional tolerances, and the functional relationships among tooling elements to ensure manufacturability, accuracy, and operational safety. Through lectures, design demonstrations, and laboratory-based drafting and modeling activities, learners develop technical fluency in tooling concepts, engineering documentation, and design communication. Assessment tasks include tool and die design projects and the machining and assembly of die components, preparing pre-service teachers to deliver design-related instruction and perform production-support tasks with confidence.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Gas Tungsten Arc Welding (GTAW)

4 units
 102-108 hours

This course equips pre-service teachers with foundational and practical competencies in performing Gas Tungsten Arc Welding (GTAW) on carbon steel plates and pipes. It covers the proper selection of electrodes, filler materials, shielding gases, welding parameters, and the application of correct joint preparation, distortion control, defect identification, and basic weld repair techniques for fabrication and light industrial applications. Through lectures, demonstrations, and hands-on laboratory welding activities, learners develop technical fluency and procedural competence in machine setup, torch manipulation, weld bead control, and weld quality inspection in accordance with safety and industry standards. Competency is demonstrated through welding drawing interpretation, weld procedure exercises, and practical welding performance tests that prepare pre-service teachers for instructional delivery and industry-aligned fabrication and maintenance work.

D.1.7 Civil and Construction Technology

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Building Codes and Standards, Safety, and I

4 units
 102-108 hours

The course equips the pre-service teachers with the essential knowledge, skills, and attitudes needed to interpret, apply, and comply with national and local building codes, safety laws, and health regulations governing the construction industry. It develops the competence in ensuring the structural integrity, functionality, and safety of buildings in accordance with the National Building Code

of the Philippines and related regulatory frameworks. It covers topics such as zoning and occupancy classifications, design and material standards, fire and electrical safety, occupational safety and health practices, environmental and sanitation requirements, and risk management in construction sites. Emphasis is placed on integrating sustainability and safety principles in planning, design, and construction processes. At the end of the course, the pre-service teachers undertake a comprehensive Building Code and Safety Compliance Report on a selected structure or simulated project, where they assess code compliance, identify hazards and violations, and recommend evidence-based corrective measures to promote safe, healthful, and legally compliant construction practices.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Construction Materials, Testing, and Method
 4 units
 102-108 hours

This course equips the pre-service teachers with comprehensive knowledge and practical competencies in the identification, selection, application, and evaluation of construction materials commonly used in residential and commercial projects. It aims to develop an understanding of the physical, mechanical, and durability properties of materials such as cement, aggregates, concrete, mortar, metals, wood, masonry units, and emerging eco-friendly and sustainable materials, while emphasizing proper testing procedures and industry standards. Specifically, it enables them to analyze material properties, perform basic laboratory and field testing, interpret test results, and apply appropriate construction methods aligned with quality assurance and safety practices. It covers material composition, standards and specifications, mix proportioning, workability, strength and durability testing, material inspection, handling and storage, construction techniques, and quality control procedures based on national and international guidelines. Teaching methodology integrates lectures, demonstrations, laboratory experimentation, guided hands-on activities, case analysis, and project-based learning to strengthen both theoretical understanding and technical skills. At the end of this course, the pre-service teachers are required to conduct selected materials tests, prepare technical reports, analyze results, and demonstrate proper construction methods through practical outputs or prototype applications, thereby ensuring the acquisition of competency in applying testing methods to support safe, efficient, and sustainable construction practices.

Course Title

Construction Painting and Finishing Works

Course Credits
Contact Hours
Prerequisite/s
Description

4 units
102-108 hours

The course equips the pre-service teachers with the knowledge, skills, and work values required to perform painting and finishing activities in accordance with industry standards. It develops competent individuals capable of preparing surfaces, selecting appropriate materials, applying various painting techniques, and executing finishing works with precision while adhering to occupational safety and health standards, as well as advancing toward estimation, planning, and supervisory competencies. It covers surface preparation for wood, concrete, and metal; identification and use of painting tools and equipment; application of paints using brush, roller, and spray methods; color mixing and tinting; repair and retouching; scaffold erection; basic estimation of materials; and work coordination and supervision. Teaching methodology involves a combination of competency-based training, demonstrations, guided hands-on activities, simulations, and project-based learning supported by industry-based scenarios to ensure mastery of both foundational and advanced skills. At the end of this course, the pre-service teachers are required to complete a comprehensive painting and finishing project—from surface preparation to final coating demonstrating proper techniques, accurate material estimation, quality workmanship, and adherence to safety practices.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Project Planning and Scheduling in Construc
4 units
102-108 hours

This course equips the pre-service teachers with the knowledge, skills, and values necessary to effectively plan, organize, and manage construction projects using systematic scheduling techniques and industry-based management practices. It aims to develop competencies in preparing project plans, estimating resources, sequencing construction activities, and monitoring project progress to ensure timely and cost-efficient completion aligned with construction standards and safety requirements. It covers the principles of construction project management, work breakdown structures (WBS), activity identification and sequencing, resource allocation, preparation of bar charts and Gantt charts, Critical Path Method (CPM), Program Evaluation and Review Technique (PERT), basic cost and time control, risk identification, procurement planning, and the use of digital scheduling tools such as spreadsheet-based and project management software applications. Teaching methodologies emphasize outcomes-based and experiential learning approaches through

	lectures, guided demonstrations, case studies, collaborative planning workshops, simulation exercises, and industry-based problem solving to mirror real construction scenarios. At the end of this course, the pre-service teachers are required to develop a comprehensive construction project plan and schedule for a selected residential or small infrastructure project, including activity sequencing, duration estimation, resource loading, and progress monitoring reports, demonstrating their ability to apply planning and scheduling principles in realistic construction environments.
Course Title	Project Estimating and Costing in Construct
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips the pre-service teachers with competencies in preparing accurate quantity estimates, cost analysis, and budget planning essential for effective construction project implementation. It aims to equip them with the knowledge and practical skills needed to interpret construction drawings and specifications, compute material quantities, estimate labor and equipment requirements, and prepare detailed cost estimates that support informed decision-making and efficient resource management. It covers fundamental principles of construction estimating, types of estimates, quantity take-off procedures, material and labor costing, equipment cost calculation, overhead and profit analysis, preparation of bills of quantities (BOQ), unit cost analysis, bid preparation, and basic cost control and value engineering concepts aligned with industry standards. Teaching methodologies employ outcomes-based and experiential learning approaches through lectures, guided computations, drawing interpretation exercises, workshops, case studies, collaborative group activities, and the use of spreadsheets or digital estimating tools to simulate real construction practices. At the end of this course, the pre-service teachers are involved in the preparation of a complete construction cost estimate for a residential or small-scale infrastructure project, including quantity take-offs, detailed cost breakdowns, and a summarized project budget, enabling students to demonstrate accuracy, analytical thinking, and professional competence in construction estimating and financial planning.
Course Title	Plumbing and Pipefitting
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips the pre-service teachers with technical knowledge, practical skills, and safety awareness in installing, maintaining, and repairing plumbing systems and pipe networks used in residential, commercial, and

industrial structures. It prepared them with the ability to interpret plumbing plans and specifications, identify appropriate materials and fittings, and apply proper procedures in water supply, drainage, and sanitary system installations following national plumbing codes and industry standards. It covers topics on plumbing tools and equipment, types and functions of pipes and fittings, water supply and distribution systems, drainage and venting systems, sanitary and stormwater installations, plumbing fixtures and traps, pipe layout and jointing methods, testing and maintenance, and occupational safety practices. They also explore sustainable plumbing technologies and water conservation measures. At the end of the course, the pre-service teachers undertake a complete plumbing installation project or pipe system layout and assembly, demonstrating their ability to design, install, and test a functional plumbing system that meets operational efficiency, safety, and environmental sustainability requirements, reflecting their readiness for real-world application in construction and maintenance operations.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Welding and Metal Works

4 units
 102-108 hours

This course equips the pre-service teachers with the essential knowledge, technical skills, and safety practices in various welding and metal fabrication processes. It develops competencies in interpreting working drawings, selecting appropriate welding materials and tools, and applying different welding techniques such as Shielded Metal Arc Welding (SMAW), Gas Metal Arc Welding (GMAW), and oxy-acetylene welding, while emphasizing precision, safety, and sustainability in metalwork operations. It covers metal identification, cutting and joining procedures, heat treatment, fabrication layout, welding positions, and basic project cost estimation. They also learn the importance of preventive maintenance, environmental considerations, and compliance with industry standards and codes. At the end of the course, the pre-service teachers are expected to design, fabricate, and assemble a functional metal project demonstrating mastery of welding joints, proper alignment, and finishing techniques. Through this hands-on approach, pre-service teachers strengthen problem-solving, craftsmanship, and innovation skills vital for industrial arts education, technical careers, and future employment in the metalworking and fabrication industry.

Course Title
Course Credits
Contact Hours

Electrical Works for Construction

4 units
 102-108 hours

Prerequisite/s
Description

This course equips pre-service teachers with fundamental to intermediate competencies required for electrical installation and maintenance in construction settings. It develops technically competent, safety-conscious, and industry-ready individuals who can perform residential and light commercial electrical wiring, installation, testing, troubleshooting, and basic supervisory tasks in compliance with the Philippine Electrical Code (PEC), occupational safety standards, and industry best practices. It covers workplace safety and hazard control, interpretation of electrical plans and symbols, use and maintenance of electrical tools and equipment, installation of electrical wiring systems, lighting and power circuits, grounding and bonding, protection devices, conduit and raceway installation, basic motor controls, circuit testing using appropriate measuring instruments, troubleshooting common electrical faults, and proper documentation and reporting of electrical works. The teaching methodology integrates a competency-based training approach, utilizing demonstration, guided practice, hands-on laboratory/workshop activities, task-based learning, simulation of real construction scenarios, peer collaboration, and performance-based assessment with continuous formative feedback. At the end of this course, pre-service teachers are required to complete the installation of a functional electrical wiring system for a small residential or commercial layout, including layout planning, actual wiring installation, testing, troubleshooting, and safety compliance evaluation.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Masonry and Tiling

4 units
102-108 hours

This course equips the pre-service teachers with the competencies in constructing, finishing, and maintaining masonry structures and tile installations in accordance with building standards and safety regulations. It provides them with the skills and knowledge necessary to prepare materials, interpret working drawings, and perform various masonry and tiling tasks with precision, durability, and aesthetic quality. It covers the identification and preparation of materials such as cement, sand, aggregates, and tiles; mixing and proportioning of mortar and concrete; laying of hollow blocks and bricks; surface leveling and alignment; tile cutting and setting methods; grout application; and finishing works for floors, walls, and decorative surfaces. It also emphasizes proper tool handling, waste minimization, and sustainable construction practices. At the end of the course, the pre-service teachers are required to perform a masonry project and install

ceramic or floor tiles in a given area following a detailed plan demonstrating mastery of alignment, spacing, adhesion, and finishing techniques. Through this practical application, learners develop craftsmanship, accuracy, and innovation essential for employment in the construction and finishing industry.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Woodworking

4 units
 102-108 hours

The course equips the pre-service teachers with the fundamental knowledge, skills, and attitudes necessary to produce functional and aesthetically pleasing wood-based products through safe, efficient, and systematic practices. It develops competencies in selecting appropriate materials, interpreting working drawings, performing accurate measurement and layout, utilizing hand and power tools, and applying basic joinery and finishing techniques. It covers the nature and properties of wood, identification and use of tools and equipment, basic woodworking processes such as cutting, shaping, assembling, sanding, and finishing, as well as workshop safety, maintenance practices, and quality control standards. Instruction is delivered through a combination of learner-centered teaching methodologies, including demonstrations, guided hands-on activities, project-based learning, and collaborative tasks that simulate real-world workshop scenarios, ensuring the integration of theory and practice. Emphasis is placed on developing precision, craftsmanship, creativity, and adherence to occupational health and safety standards. At the end of this course, the pre-service teachers are expected to complete a performance task involving the design and fabrication of a functional wooden product such as a small table, stool, or cabinet component and the like based on a given plan or self-generated design, demonstrating accuracy in measurement, proper tool handling, sound joinery, and quality finishing, while reflecting professional work ethics and sustainable use of materials.

D.1.8 Architectural Drafting Technology

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Fundamentals of Technical Drafting

4 units
 102-108 hours

The course equips pre-service teachers with foundational knowledge and skills in technical drafting essential for career and technical education. The course introduces the basic principles, standards, and conventions used in preparing technical drawings. It includes the proper selection, use, and maintenance of drafting tools and instruments; freehand and mechanical lettering; geometric construction;

the alphabet of lines; and the application of dimensioning and scaling in producing accurate technical drawings. The course also introduces projection theory and the use of orthographic and pictorial projections to represent the spatial relationships of objects through multi-view drawings. Learning experiences integrate lectures, demonstrations, and guided hands-on drafting activities that develop accuracy, precision, and adherence to established drafting standards. Aligned with the competency standards, the course enhances visual-spatial reasoning, systematic drafting procedures, and professional work habits. It prepares pre-service teachers to produce clear, accurate, and standards-based technical drawings while observing proper work ethics and safety practices. The course also provides foundational preparation for advanced drafting courses and for teaching applications in career and technical education programs.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Introduction to Architecture and Theory of D
 4 units
 102-108 hours

The course equips pre-service teachers with a foundational understanding of architecture as a discipline that integrates aesthetic judgment, functional planning, cultural context, and environmental responsiveness. This course covers the history and evolution of architectural thought, key movements and styles, and the elements and principles of design that guide effective spatial composition. Pre-service teachers develop architectural presentation skills through guided practice in shading, black-and-white rendering, color theory application, and wash techniques, enabling them to communicate design intent clearly and professionally. Learning experiences combine lectures, demonstrations, hands-on plate work, design critiques, and reflection activities grounded in the required competencies and PQF Level 6 outcomes. Emphasis is placed on creativity, cultural and environmental awareness, and adherence to professional and ethical standards in conceptualizing and presenting architectural forms. By the end of the course, pre-service teachers demonstrate the ability to analyze architectural precedents, apply design principles in producing conceptual sketches and rendered drawings, and prepare visual outputs suitable for both academic requirements and industry-relevant architectural drafting tasks.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Mechanical Drawing and Furniture Designing
 4 units
 102-108 hours

The course equips pre-service teachers with foundational competencies in mechanical

drawing and furniture design essential for Industrial Arts education and technical drafting practice. This course covers the application of drafting standards, abbreviations, symbols, and sectioning principles in producing accurate mechanical drawings, as well as the study of furniture types, standard measurements, anthropometry, ergonomics, and functional design considerations. Pre-service teachers develop the ability to prepare working drawings and simple bills of materials, ensuring clarity and precision in the documentation of furniture components and assemblies. Learning experiences integrate lecture-discussions, guided plate work, and project-based design tasks aligned with the required competencies and PQF Level 6 performance outcomes. Emphasis is placed on accuracy, efficiency in workflow, creativity in form development, and adherence to industry-relevant conventions. By the end of the course, pre-service teachers demonstrate the ability to produce complete and technically sound mechanical and furniture drawings, apply ergonomic and design principles in developing basic furniture concepts, and organize drafting outputs into a portfolio suitable for both instructional use and workplace application.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Space Programming and Creative Design

4 units
 102-108 hours

The course equips pre-service teachers with the knowledge and skills needed to plan and organize interior and exterior spaces that are functional, aesthetic, and responsive to user needs and site conditions. This course covers site development planning, lot plotting, map interpretation, and site analysis as foundations for spatial design. It introduces space programming methods that integrate building codes, accessibility standards, safety regulations, and cultural-environmental considerations in the preparation of architectural plans. Pre-service teachers produce floor plans, elevations, and layout drawings that demonstrate balance between creativity and technical precision, applying principles of circulation, zoning, proportion, and design coherence. Learning experiences include lectures, guided drafting exercises, design critiques, and project simulations aligned with required competencies in preparing architectural documentation. Emphasis is placed on problem-solving, spatial reasoning, and systematic design processes. By the end of the course, pre-service teachers demonstrate the ability to analyze sites, develop functional and aesthetic space plans, and present design outputs through clear, accurate, and professionally organized drafting plates and portfolios suitable for instructional and industry applications.

Course Title**Course Credits****Contact Hours****Prerequisite/s****Description****Integrated Architectural and Engineering Building Plans and Drafting**

4 units

102-108 hours

The course equips pre-service teachers with advanced competencies in preparing coordinated architectural and engineering building plans essential for professional drafting practice. This course covers the development of complete construction documents, including architectural floor plans, elevations, sections, and details, as well as basic structural, electrical, sanitary, and plumbing layouts. Pre-service teachers learn to interpret and apply building codes, technical standards, and symbols to ensure accuracy, clarity, safety, and regulatory compliance in all drafted outputs. Instruction integrates systems coordination, where multiple engineering components are harmonized into a single, coherent plan set that communicates design intent effectively to builders and allied professionals. Learning activities include lecture-discussions, demonstrations, hands-on drafting exercises, and project simulations aligned with required performance outcomes. Emphasis is placed on precision, organization, proper sheet arrangement, and adherence to industry documentation conventions. By the end of the course, pre-service teachers demonstrate the ability to produce complete, accurate, and professionally structured architectural and engineering plans, preparing them for higher-level drafting applications, teaching practice, and potential industry certification.

Course Title**Course Credits****Contact Hours****Prerequisite/s****Description****Building Materials and Construction Estimat**

4 units

102-108 hours

The course equips pre-service teachers with foundational knowledge and practical skills in identifying construction materials, understanding building methods, and preparing accurate cost estimates for various building systems. This course covers the classification, properties, and appropriate selection of structural, architectural, electrical, and plumbing materials, along with procedures for preparing material take-offs, bills of materials, cost computations, and basic project scheduling. Pre-service teachers learn to develop a program of work and construction timelines while applying standards of accuracy, efficiency, and professional accountability. Learning experiences integrate lectures, guided computation exercises, case analyses, and project-based estimation tasks aligned with required competencies. Emphasis is placed on correct measurement, resource planning, and documentation techniques required in construction practice. By the end of

the course, pre-service teachers demonstrate the ability to prepare complete and well-organized cost estimates and construction work plans that support both instructional requirements and real-world building applications.

Course Title

Course Credits

Contact Hours

Prerequisite/s

Description

Advanced Architectural CAD Techniques: 2D 3D

4 units

102-108 hours

The course equips pre-service teachers with advanced competencies in computer-aided drafting and digital design visualization essential for architectural and technical drafting practice. This course covers the use of industry-standard software such as AutoCAD for 2D drawing and documentation, SketchUp for 3D modeling, and Enscape for real-time rendering and presentation. Pre-service teachers learn to customize CAD environments, manage layers, create and apply dynamic blocks, and utilize tools that enhance accuracy, efficiency, and workflow automation. They develop 3D architectural models and generate photorealistic visualizations and walkthroughs to communicate design concepts effectively. Learning experiences include demonstrations, guided laboratory sessions, skill-building exercises, and project-based applications aligned with required performance outcomes. Emphasis is placed on precision, professional drawing standards, visual clarity, and responsiveness to client or project requirements. By the end of the course, pre-service teachers demonstrate the ability to produce complete and professionally formatted 2D and 3D CAD outputs, organize digital files systematically, and prepare high-quality presentation models suitable for instructional use, teaching demonstrations, and industry-relevant drafting tasks.

Course Title

Course Credits

Contact Hours

Prerequisite/s

Description

Advanced 3D Modeling (BIM with Revit)

4 units

102-108 hours

The course equips pre-service teachers with foundational and applied competencies in Building Information Modeling (BIM) as a digital platform for integrated architectural and engineering documentation. This course covers project setup, workspace configuration, and the creation of parametric 3D building components, including walls, floors, roofs, doors, windows, structural elements, electrical fixtures, and plumbing components. Pre-service teachers learn to organize sheets, apply annotations and detailing standards, generate schedules and quantity take-offs, and prepare coordinated plan sets for construction documentation. The course also provides training in visualization techniques,

including camera views, walkthrough animations, and basic rendering to communicate design intent. Learning activities combine lectures, guided laboratory practice, collaborative modeling tasks, and portfolio-based output aligned with required competencies and performance outcomes. Emphasis is placed on accuracy, system coordination, workflow efficiency, and adherence to professional drafting and documentation standards. By the end of the course, pre-service teachers demonstrate the ability to produce integrated architectural and engineering BIM models, generate clear and organized plan sets, and apply BIM tools for teaching, project communication, and industry-relevant drafting applications.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Industrial Design I: Computer-Aided Design
 4 units
 102-108 hours

The course equips pre-service teachers with fundamental competencies in computer-aided industrial and product design using SolidWorks as the primary modeling and drafting platform. This course covers 2D sketch creation, parametric and feature-based 3D part modeling, multi-component assembly development, and the preparation of professional engineering drawings with dimensions, tolerances, annotations, exploded views, and bills of materials. Pre-service teachers explore design principles that support function, manufacturability, and user-centered considerations, enabling them to conceptualize and refine product forms with precision and efficiency. Learning activities include software demonstrations, guided laboratory tasks, iterative design exercises, and project applications aligned with required competencies, consistent with performance outcomes. Emphasis is placed on accuracy, workflow organization, problem-solving, and effective digital documentation practices. By the end of the course, pre-service teachers demonstrate the ability to produce complete 3D models and assemblies, generate industry-standard technical drawings, and present product design outputs suitable for instructional use, portfolio development, and potential industry application.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Industrial Design II: Advanced SolidWorks (CAD with 2D/3D Simulation)
 4 units
 102-108 hours

The course equips pre-service teachers with advanced competencies in computer-aided product and industrial design using SolidWorks, building on foundational skills developed in Industrial Design I. This course covers complex modeling techniques, including bottom-up assembly modeling, sheet

metal and surface modeling, motion simulation, and flow simulation for performance analysis and design optimization. Pre-service teachers apply advanced feature-based modeling and simulation tools to evaluate mechanical behavior, aerodynamic response, and functional efficiency of product components and assemblies. Learning experiences include software demonstrations, guided laboratory practice, iterative model refinement, and project-based applications aligned with required competencies and performance outcomes. Emphasis is placed on innovation, accuracy, systematic workflow, and professional technical documentation for engineering and manufacturing contexts. By the end of the course, pre-service teachers demonstrate the ability to develop and analyze complex 3D models and assemblies, perform simulations to improve design performance, and produce polished engineering drawings and presentations suitable for instructional use, portfolio development, and real-world product design applications.

D.1.9 Welding and Fabrication Technology

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Metrology and Blueprint Reading

4 units
 102-108 hours

This course equips pre-service teachers with the foundational competencies of Machining and Metal Fabrication Technology, including measurement, inspection, and blueprint reading. It covers global measurement systems and standards, application of tolerances and calibration, and proper selection and utilization of precision tools such as vernier instruments, micrometers, gauges, and angular measuring tools to ensure accuracy in machining operations. To deepen appreciation and application of measurement, pre-service teachers engage with the interpretation of mechanical blueprint conventions, including symbols, dimensions, tolerances, and bill of materials. Through lectures, demonstrations, and active participation in real-world exercises, pre-service teachers gain the technical fluency and spatial reasoning necessary for precise assembly, fabrication, and machine operations. Assessment tasks include written tests on blueprint reading and practical measurement activities that prepare pre-service teachers for machining work supporting precision manufacturing, equipment maintenance, and design across metalworking and industrial production settings.

Course Title
Course Credits
Contact Hours
Prerequisite/s

Benchwork and Pipefitting

4 units
 102-108 hours

Description

This course equips pre-service teachers with advanced technical and pedagogical competencies in performing benchwork and pipefitting operations in accordance with technical drawings, workplace safety regulations, and relevant industry standards. It develops their ability to interpret fabrication and installation layouts, apply accurate measurement and marking techniques, select appropriate tools and materials, and perform precise fitting, cutting, threading, bending, and assembly of metallic and non-metallic piping systems, as well as bench-fabricated components. The course covers benchwork fundamentals, hand and power tool operations, layout and measurement techniques, pipe materials and fittings, pipe joint preparation and assembly methods, alignment and support installation, leak testing procedures, and basic troubleshooting and repair practices for industrial, building services, and fabrication applications. Emphasis is placed on occupational health and safety practices, dimensional accuracy, work sequencing, and quality assurance requirements to ensure safe, reliable, and compliant installations. Through guided demonstrations and intensive laboratory-based activities, pre-service teachers perform bench fabrication tasks, prepare and assemble pipe joints, install supports and fittings, and conduct inspection and functional testing of assembled systems. Complementing the technical competencies, they design competency-based learning activities, instructional modules, and assessment tools that translate benchwork and pipefitting processes into effective teaching strategies for future TVET learners.

Course Title

SMAW1: Weld Carbon and Alloy Steel Plates using Shielded Metal Arc Welding

Course Credits

4 units

Contact Hours

102-108 hours

Prerequisite/s**Description**

This course equips pre-service teachers with advanced technical and pedagogical competencies in performing shielded metal arc welding (SMAW) on carbon and alloy steel plates in accordance with approved welding procedures, technical drawings, workplace safety regulations, and relevant industry standards. It develops their ability to interpret fabrication layouts, select suitable electrodes and consumables, prepare base materials and joints, and establish appropriate welding parameters for various plate thicknesses and joint configurations. The course covers welding process fundamentals, joint design and fit-up, bead control, multi-pass welding techniques, distortion control, defect identification, and basic weld repair procedures for fabrication and structural applications. Emphasis is placed on occupational health and safety practices, quality assurance requirements, and

systematic inspection using visual and dimensional criteria to ensure weld integrity and compliance. Through guided demonstrations and intensive laboratory-based activities, pre-service teachers perform plate joint preparation, welding in multiple positions, and post-weld evaluation. Complementing the technical competencies, they design competency-based learning activities, instructional modules, and assessment tools that translate SMAW plate welding processes into effective teaching strategies for future TVET learners.

Course Title

SMAW2: Weld Carbon Steel Pipes using Shielded Metal Arc Welding

Course Credits

4 units

Contact Hours

102-108 hours

Prerequisite/s

Description

This course equips pre-service teachers with advanced technical and pedagogical competencies in performing shielded metal arc welding (SMAW) on carbon steel pipes in accordance with approved welding procedures, pipe fabrication drawings, workplace safety regulations, and industry standards. It develops the ability to prepare and assemble pipe joints, select appropriate electrodes, and apply suitable welding parameters for different pipe diameters, wall thicknesses, and welding positions. The course covers pipe joint design and fit-up, root pass control, hot pass and fill techniques, multi-pass welding, distortion management, defect recognition, and basic weld repair for industrial and fabrication applications. Emphasis is placed on safe work practices, pipe alignment and support installation, and quality assurance through visual inspection and dimensional verification to ensure structural soundness. Through guided demonstrations and intensive laboratory-based activities, pre-service teachers perform pipe cutting and preparation, joint alignment, positional welding, and post-weld inspection. Complementing the technical competencies, they develop competency-based instructional modules, learning tasks, and assessment tools that translate SMAW pipe welding operations into effective teaching strategies for future TVET learners.

Course Title

GTAW1: Weld Carbon Steel Plates and Pipes using Gas Tungsten Arc Welding

Course Credits

4 units

Contact Hours

102-108 hours

Prerequisite/s

Description

This course equips pre-service teachers with advanced technical and pedagogical competencies in performing gas tungsten arc welding (GTAW) on carbon steel plates and pipes in accordance with approved welding procedures, technical drawings, workplace safety regulations, and relevant industry

standards. It develops their ability to prepare joints, select tungsten electrodes, shielding gases, and filler materials, and establish precise welding parameters for high-quality manual GTAW operations. The course covers GTAW process principles, joint design and fit-up, heat input control, root pass and multi-pass techniques, distortion management, defect identification, and basic weld repair procedures for fabrication and light industrial applications. Emphasis is placed on occupational health and safety practices, cleanliness and surface preparation, and quality assurance through systematic visual and dimensional inspection. Through guided demonstrations and intensive laboratory-based activities, pre-service teachers perform plate and pipe joint preparation, execute GTAW welds in multiple positions, and evaluate weld quality. Complementing the technical competencies, they design competency-based learning activities, instructional modules, and assessment tools that translate GTAW welding processes into effective teaching strategies for future TVET learners.

Course Title

GTAW2: Weld Alloy Steel Plates and Pipes using Gas Tungsten Arc Welding

Course Credits

4 units

Contact Hours

102-108 hours

Prerequisite/s

Description

This course equips pre-service teachers with advanced technical and pedagogical competencies in performing gas tungsten arc welding (GTAW) on alloy steel plates and pipes in accordance with approved welding procedures, material specifications, workplace safety regulations, and industry standards. It develops their ability to analyze alloy steel welding requirements, select appropriate filler materials and shielding gases, apply preheat and interpass temperature controls, and establish welding parameters suitable for critical joints. The course covers metallurgy considerations for alloy steels, joint preparation and fit-up, heat input management, positional welding techniques, prevention of cracking and distortion, defect identification, and basic weld repair procedures for industrial and high-performance applications. Emphasis is placed on strict safety practices, documentation of welding parameters, and quality assurance through visual inspection and dimensional verification. Through guided demonstrations and intensive laboratory-based activities, pre-service teachers perform plate and pipe GTAW operations, control weld quality in different positions, and conduct post-weld evaluation. Complementing the technical competencies, they develop competency-based instructional modules, learning tasks, and assessment tools that translate advanced GTAW practices for alloy steels into effective teaching

strategies for future TVET learners.

Course Title

GMAW: Weld Alloy Steel Plate and Pipes using Gas Metal Arc Welding

Course Credits

4 units

Contact Hours

102-108 hours

Prerequisite/s

Description

This course equips pre-service teachers with advanced technical and pedagogical competencies in performing gas metal arc welding (GMAW) on alloy steel plates and pipes in accordance with approved welding procedures, technical drawings, workplace safety regulations, and relevant industry standards. It develops their ability to select suitable filler wires, shielding gases, and welding modes and to establish appropriate parameters for stable metal transfer and consistent weld quality. The course covers GMAW process principles, joint design and preparation, welding position techniques, control of heat input and distortion, defect recognition, and basic weld repair procedures for fabrication and industrial applications. Emphasis is placed on safe equipment operation, quality assurance requirements, and systematic inspection using visual and dimensional criteria to ensure structural reliability and compliance. Through guided demonstrations and intensive laboratory-based activities, pre-service teachers perform plate and pipe joint welding, apply different GMAW operating modes, and evaluate weld quality. Complementing the technical competencies, they design competency-based learning activities, instructional modules, and assessment tools that translate GMAW welding operations into effective teaching strategies for future TVET learners.

Course Title

FCAW: Weld Carbon Steel Plates using Flux-Cored Arc Welding

Course Credits

4 units

Contact Hours

102-108 hours

Prerequisite/s

Description

This course equips pre-service teachers with advanced technical and pedagogical competencies in performing flux-cored arc welding (FCAW) on carbon steel plates in accordance with approved welding procedures, fabrication drawings, workplace safety regulations, and industry standards. It develops the ability to select appropriate flux-cored wires and shielding options, prepare joints, and establish suitable welding parameters for high-deposition and positional welding applications. The course covers FCAW process fundamentals, joint preparation and fit-up, welding techniques for various plate thicknesses, control of penetration and bead profile, defect identification, and basic weld repair procedures for structural and fabrication applications. Emphasis is placed on

occupational health and safety practices, productivity considerations, and quality assurance through visual inspection and dimensional verification. Through guided demonstrations and intensive laboratory-based activities, pre-service teachers perform plate joint preparation, execute FCAW welds in multiple positions, and assess weld integrity. Complementing the technical competencies, they design competency-based learning activities, instructional modules, and assessment tools that translate FCAW plate welding processes into effective teaching strategies for future TVET learners.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Sheet Metal Processing and Assembly
 4 units
 102-108 hours

This course equips pre-service teachers with advanced technical and pedagogical competencies in performing sheet metal processing and assembly operations in accordance with technical drawings, workplace safety regulations, and industry standards. It develops their ability to interpret fabrication layouts, select appropriate materials and tools, and apply correct processing parameters for cutting, forming, bending, fastening, and joining operations. The course covers sheet metal properties, layout and marking techniques, shearing and cutting processes, bending and forming methods, edge finishing, mechanical fastening, and basic joining processes for fabrication and light manufacturing applications. Emphasis is placed on occupational health and safety practices, dimensional accuracy, process planning, and quality assurance procedures to ensure functional and structurally reliable sheet metal products. Through guided demonstrations and intensive laboratory-based activities, pre-service teachers perform layout preparation, machine setup, component forming, sub-assembly, and final assembly of sheet metal products using standard workshop equipment and tools. Complementing the technical competencies, they design competency-based learning activities, instructional modules, and assessment tools that translate sheet metal processing and assembly operations into effective teaching strategies for future TVET learners.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Jigs and Fixture Design using CAD
 4 units
 102-108 hours

This course equips pre-service teachers with advanced technical and pedagogical competencies in designing and documenting jigs and fixtures using computer-aided design

(CAD) systems to support accurate, safe, and efficient manufacturing and assembly operations. It develops their ability to analyze production requirements, apply locating and clamping principles, and design functional jig and fixture assemblies that ensure repeatability, precision, and operator safety. The course covers design fundamentals, degrees of freedom and location principles, clamping mechanisms, tolerance considerations, modular and dedicated fixture concepts, standard elements, and CAD-based modeling and detailing of jig and fixture components and assemblies. Emphasis is placed on design for manufacturability, ergonomics, safety compliance, and systematic verification of designs through digital simulation and layout evaluation. Through guided demonstrations and laboratory-based CAD activities, pre-service teachers develop complete jig and fixture models, generate working drawings, and present design solutions for typical machining, drilling, welding, and assembly applications. Complementing the technical competencies, they develop competency-based instructional modules, learning tasks, and assessment tools that translate jig and fixture design processes into effective teaching strategies for future TVET learners.

D.1.10 Heating, Ventilating, Air Conditioning, and Refrigeration Technology

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Basic Electricity and Circuits (HVACR)
 4 units
 102-108 hours

This course equips pre-service teachers with essential knowledge of electrical principles as applied to heating, ventilation, air-conditioning, and refrigeration (HVACR) systems. This covers current, voltage, resistance, and power in AC and DC circuits, emphasizing safe work practices, accurate measurement, and the proper use of electrical tools and test instruments. Pre-service teachers study Ohm's Law, series and parallel circuits, transformers, capacitors, relays, circuit protection devices, and grounding systems, thereby establishing a strong foundation in circuit theory and its applications. The course also highlights occupational health and safety (OHS) practices, including safe tool handling and lockout–tagout procedures to prevent electrical hazards. Delivered through a lecture–laboratory format, it combines theoretical instruction with hands-on circuit-building, wiring, testing, and troubleshooting activities that simulate real HVACR electrical systems. Through these activities, pre-service teachers demonstrate technical competence and develop the ability to design instructional materials and teaching demonstrations that make electrical concepts accessible to learners. Laboratory performance, wiring exercises, testing and

troubleshooting activities, and instructional outputs reinforce both technical mastery and pedagogical readiness to teach basic electricity for HVACR applications.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Fundamentals of Heating and Ventilation

4 units
 102-108 hours

This course equips pre-service teachers with foundational knowledge of heating and ventilation principles and practices as applied to HVACR systems. This covers airflow dynamics, heating methods, ventilation requirements, and indoor air quality, emphasizing the safe installation, operation, and maintenance of small-scale domestic systems. Pre-service teachers study various types of heating systems—electric, gas, and solid fuel—alongside natural and mechanical ventilation methods, duct design fundamentals, filters, fans, blowers, and indoor air quality standards. The course highlights occupational health and safety (OHS) practices such as fire prevention, safe handling of heating appliances, and proper use of ventilation equipment. Delivered through a lecture–laboratory approach, it integrates theoretical instruction with demonstrations and hands-on laboratory activities, including the setup of heating units, airflow testing, and ductwork assessment. To reinforce pedagogical readiness, pre-service teachers design learning materials and conduct microteaching sessions that translate heating and ventilation concepts into meaningful and practical lessons for learners. Through these experiences, pre-service teachers develop both technical competence and instructional capability in teaching the fundamentals of HVACR heating and ventilation systems.

Course Title	Fundamentals of Refrigeration and Air Conditioning
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course develops the foundational knowledge and skills of pre-service teachers in the principles and applications of refrigeration and air conditioning (RAC) systems. It covers basic concepts in thermodynamics and heat transfer, including conduction, convection, and radiation, as well as the mechanical refrigeration cycle involving compression, condensation, expansion, and evaporation. The course examines the functions and operation of major RAC components such as compressors, condensers, evaporators, and expansion devices, along with the properties and safe handling of refrigerants. Basic system identification, use of tools and instruments, and introductory troubleshooting are included to support practical understanding. Concepts in system efficiency and energy conservation are introduced at a fundamental level. Laboratory activities involve assembling simple RAC models, inspecting components, and performing basic performance checks. Emphasis is placed on occupational health and safety practices, proper refrigerant management, and environmental compliance. As future

	educators, pre-service teachers design competency-based instructional materials and demonstrations to support technical-vocational training and effective classroom instruction.
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Course Title	HVACR for Domestic Application
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the knowledge and skills to install, service, and troubleshoot domestic refrigeration and air-conditioning systems. This covers installation and maintenance of refrigerators, window-type air-conditioning units, and small freezers, emphasizing safety, efficiency, and environmental responsibility. Pre-service teachers develop competencies in system performance evaluation, basic load assessment, refrigerant charging and recovery, leak testing, and retrofitting of older systems. The course highlights occupational health and safety (OHS) practices, including proper handling of refrigerants, use of personal protective equipment (PPE), and adherence to environmental regulations in refrigerant recovery and disposal. Delivered through a lecture-laboratory format, it combines theoretical instruction with extensive hands-on practice through guided installation, servicing, and troubleshooting exercises that simulate real-world conditions. Pre-service teachers also prepare lesson plans and conduct microteaching demonstrations that connect technical RAC concepts with effective instructional strategies for classroom delivery. Through these learning experiences, they develop both technical competence and teaching readiness in domestic refrigeration and air-conditioning systems.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

HVACR Electrical Control Systems

4 units
102-108 hours

This course develops the technical and pedagogical competencies of pre-service teachers in electrical control systems used in domestic HVACR applications. It covers the principles of control wiring, circuit protection, and relay logic, including the operation of thermostats, contactors, relays, overload devices, and fuses. The course emphasizes the interpretation of schematic diagrams, control circuit assembly, and the sequence of operation of common HVACR systems. Basic electrical measurement using test instruments and systematic troubleshooting procedures are introduced to support fault diagnosis and system verification. Laboratory activities involve reading wiring diagrams, constructing and testing control circuits, and identifying faults in simulated and actual systems. Emphasis is placed on occupational health and safety practices, including electrical safety, proper grounding, and safe testing procedures. As future educators, pre-service teachers design competency-based instructional materials and demonstrations to support effective teaching of HVACR control systems in technical-vocational settings.

Course Title
Course Credits

Automobile/Mobile Air-Conditioning System

4 units

Contact Hours
Prerequisite/s
Description

102-108 hours

This course develops the technical and pedagogical competencies of pre-service teachers in the installation, servicing, and troubleshooting of automotive and mobile air-conditioning systems. It covers the operation and maintenance of system components such as compressors, condensers, evaporators, hoses, and electrical control devices used in transportation applications. The course emphasizes refrigerant management, including recovery, recycling, charging, and leak detection, as well as system performance testing and energy efficiency. Basic diagnostic procedures and the use of service tools such as manifold gauges and vacuum pumps are introduced to support effective troubleshooting. Retrofitting of systems for alternative refrigerants is also discussed. Laboratory activities involve dismantling and assembling mobile air-conditioning systems, conducting leak tests, charging refrigerants, and diagnosing system faults. Emphasis is placed on occupational health and safety practices, including safe handling of refrigerants and proper servicing procedures. As future educators, pre-service teachers design competency-based instructional materials and demonstrations to support effective teaching of automotive air-conditioning systems.

Course Title

Air Handling Units—Installation, Service, and Maintenance

Course Credits
Contact Hours
Prerequisite/s
Description

4 units
102-108 hours

This course equips pre-service teachers with the knowledge and skills to install, service, and maintain air handling units (AHUs) used in ventilation and air-conditioning systems. This covers ductwork design and installation, filter types and replacement, fan and blower servicing, coil cleaning, damper adjustment, and system balancing, with emphasis on energy efficiency, safety, and operational reliability. Pre-service teachers study the components and functions of AHUs, focusing on how airflow, temperature control, and filtration systems contribute to indoor air quality and environmental comfort. The course also integrates occupational health and safety (OHS) practices, including confined space procedures, proper use of personal protective equipment (PPE), and safe maintenance protocols. Delivered through a lecture–laboratory format, it combines theoretical instruction with hands-on sessions involving the assembly of AHU components, servicing of filters and fans, and system testing and balancing. To strengthen instructional competence, pre-service teachers prepare lesson plans and conduct microteaching sessions that translate AHU

operation and maintenance principles into practical and engaging learning experiences for future learners.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

HVACR for Commercial Application

4 units
102-108 hours

This course equips pre-service teachers with the knowledge and skills to install, operate, and troubleshoot commercial refrigeration and air-conditioning systems, aligned with advanced industry practices. This covers split-type and packaged air-conditioning units, as well as cold storage and walk-in freezer systems, emphasizing efficiency, safety, and system reliability. Pre-service teachers learn to perform load calculations, diagnose mechanical and electrical faults, and evaluate system performance for commercial-scale applications. The course also highlights occupational health and safety (OHS) practices, including proper refrigerant handling, electrical system safety, and maintenance of high-capacity HVACR equipment. Delivered through a lecture-laboratory format, it integrates theoretical instruction with hands-on laboratory work involving the installation, servicing, and troubleshooting of commercial units, along with preparation of service documentation and performance reports. To develop pedagogical competence, pre-service teachers design lesson plans, instructional materials, and teaching aids that translate complex commercial HVACR systems into practical and understandable lessons for learners. Through these activities, they gain both technical proficiency and instructional readiness to teach commercial refrigeration and air-conditioning concepts effectively.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Advanced HVACR Control Systems and Aut

4 units
102-108 hours

This course equips pre-service teachers with advanced knowledge and skills in the configuration, maintenance, and troubleshooting of automated HVACR control systems. This covers programmable logic controllers (PLCs), sensors, and building automation technologies, emphasizing their integration into modern HVACR operations. Pre-service teachers develop the ability to read and interpret advanced wiring diagrams, configure digital sensors, and apply PLC programming principles to automate temperature, airflow, and pressure controls. The course also highlights the use of smart HVACR systems and building management platforms that enhance energy efficiency and operational reliability. Emphasis is placed on safety practices, including electrical hazard management and electrostatic discharge

(ESD) precautions. Delivered through a lecture–laboratory format, the course combines theory with hands-on activities such as configuring control systems, simulating operational faults, and troubleshooting automation failures. In applying these learning experiences, pre-service teachers design lesson plans and conduct microteaching sessions that translate automation and control concepts into clear, practical learning experiences for learners. These integrated tasks ensure that pre-service teachers develop both technical proficiency and instructional competence in HVACR automation and control systems.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

HVACR for Marine and Industrial Application
 4 units
 102-108 hours

This course equips pre-service teachers with advanced competencies in marine and industrial-scale HVACR systems, serving as a capstone experience that integrates technical expertise with instructional application. This covers the study and operation of central plant systems, large-scale refrigeration, cold storage facilities, and chilled water systems, emphasizing efficiency, sustainability, and safety in industrial contexts. Pre-service teachers explore marine HVACR systems and industrial refrigeration design principles, focusing on performance analysis, energy optimization, and environmental compliance. The course also integrates occupational health and safety (OHS) protocols and sustainable practices essential in large-scale operations. Delivered through a lecture–laboratory format, it combines technical instruction with case studies, system design projects, and laboratory simulations that replicate marine and industrial HVACR environments. To strengthen pedagogical competence, pre-service teachers prepare instructional materials and lesson plans and conduct microteaching sessions that translate complex HVACR concepts into accessible, application-oriented lessons. These learning experiences ensure that pre-service teachers demonstrate both technical mastery and instructional readiness to teach marine and industrial HVACR systems effectively in higher education and advanced technical training settings.

D.1.11 Mechatronics Technology

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Fundamentals of Mechatronics Systems
 4 units
 102-108 hours

This course equips pre-service teachers with foundational knowledge and practical skills in mechatronics, integrating mechanical, electrical, electronic, and control elements into

basic system designs. This covers the analysis, assembly, and troubleshooting of entry-level mechatronic systems while emphasizing the development of instructional strategies to simplify complex automation concepts for learners. Pre-service teachers study the interaction of mechanical, electrical, and electronic subsystems in integrated systems, exploring mechanical principles such as motion, gears, and linkages; electrical concepts including DC/AC circuits, Ohm's and Kirchhoff's Laws; and digital fundamentals such as logic gates and signal processing. Real-world examples, including conveyors, elevators, and household appliances, are analyzed to demonstrate practical applications. Delivered through a lecture–laboratory format, the course combines theoretical instruction with extensive hands-on practice. Pre-service teachers assemble mechanical components, wire circuits, and integrate sensors and actuators into simple control systems while applying systematic troubleshooting techniques. They also design lesson plans, instructional materials, and conduct microteaching sessions that contextualize mechatronic concepts for classroom learning. Through these experiences, pre-service teachers develop both technical competence and pedagogical readiness to teach foundational mechatronics effectively.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Sensors, Actuators, and Control Systems
 4 units
 102-108 hours

This course develops the technical and pedagogical competencies of pre-service teachers in the selection, installation, integration, and troubleshooting of sensors, actuators, and basic control systems used in mechatronic applications. It covers the principles, characteristics, and applications of common sensors, including temperature, proximity, ultrasonic, and photoelectric devices, as well as actuators such as electric motors, solenoids, and pneumatic systems. Fundamental control concepts are introduced, including open-loop and closed-loop systems, feedback mechanisms, and basic proportional–integral–derivative (PID) control. Emphasis is placed on signal types, calibration, system response, and performance evaluation. Laboratory activities involve sensor interfacing, actuator control, and system integration using microcontrollers and introductory programmable logic controllers (PLCs). The course also develops skills in system assembly, testing, and fault diagnosis within industrial and automation contexts, with attention to safety and proper equipment handling. Pre-service teachers design competency-based instructional materials and demonstrations to effectively teach mechatronic concepts. The course

culminates in a functional automation project and an accompanying instructional package.

Course Title

Programmable Logic Controllers (PLC) and Automation

Course Credits

4 units

Contact Hours

102-108 hours

Prerequisite/s

Description

The course equips pre-service teachers with advanced knowledge and practical competencies in Programmable Logic Controllers (PLC) and industrial automation essential for mechatronics technology instruction and industry applications. This course covers PLC architecture, ladder logic programming, input/output interfacing, sensor integration, and control system design, emphasizing the configuration and troubleshooting of automated processes. Pre-service teachers apply programming functions and control strategies through laboratory activities using industry-standard PLC platforms such as Siemens and Allen-Bradley, simulating real-world automation scenarios including conveyor systems, packaging lines, and automated assembly operations. Learning experiences integrate lectures, guided laboratory work, problem-based learning activities, and project simulations aligned with related automation competencies. Emphasis is placed on system analysis, safety procedures, documentation, and the development of instructional materials for competency-based teaching. By the end of the course, pre-service teachers demonstrate the ability to design and implement PLC-controlled systems, troubleshoot program and hardware faults, and prepare instructional modules and assessment strategies that support effective training in PLC operation and industrial automation.

Course Title	Industrial Robotics and Automation
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course develops the technical and pedagogical competencies of pre-service teachers in the operation, basic programming, and troubleshooting of industrial robotic systems used in automated environments. It covers fundamental robotics concepts, including robot classification, coordinate systems, kinematics, degrees of freedom, end-effectors, and the integration of sensors and basic machine vision. Pre-service teachers examine common industrial applications such as material handling, assembly, welding, and inspection, emphasizing efficiency, precision, and workplace safety. Laboratory and simulation activities use generic robotics simulation environments and educational robotic platforms to perform tasks such as pick-and-place operations, path programming, and coordinated motion control. Basic robot programming techniques and system interfacing with sensors and controllers are introduced. The course also develops skills in system setup, testing, and fault diagnosis within automated systems, with emphasis on safety standards and proper operation. As future educators, pre-service teachers design

	competency-based instructional materials and assessment tools aligned with technical-vocational training requirements. The course culminates in a functional robotic application project and an instructional package.
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Course Title	Embedded Systems and Internet of Things
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course develops the fundamental and applied competencies of pre-service teachers in embedded systems programming and Internet of Things (IoT) applications for mechatronic and automated systems. It covers microcontroller-based system design, including digital and analog input/output, sensor and actuator interfacing, and basic control logic. IoT concepts such as device connectivity, communication protocols (Wi-Fi, Bluetooth, MQTT), data acquisition, and cloud-based monitoring are introduced. Learners design and implement embedded and IoT solutions for applications such as smart automation, energy monitoring, and environmental control. Laboratory activities include circuit integration, programming, testing, and troubleshooting of connected devices. Basic considerations in system reliability, power management, and cybersecurity are emphasized. The course also develops skills in system documentation and integration within industrial and real-world contexts. As future educators, pre-service teachers design competency-based instructional materials and demonstrations to support effective teaching in technical-vocational and secondary education. The course culminates in a functional embedded or IoT-based project and an instructional package.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Hydraulics, Pneumatics, and Fluid Power Sy
4 units
102-108 hours

This course develops the technical and pedagogical competencies of pre-service teachers in the design, operation, servicing, and troubleshooting of hydraulic and pneumatic systems used in industrial and mechatronic applications. It introduces the principles of fluid power, including pressure, flow, and force, and the functions of system components such as pumps, compressors, valves, actuators, hoses, seals, and fittings. Pre-service teachers design and analyze basic to intermediate fluid power circuits, including electro-pneumatic and electro-hydraulic systems, and apply diagnostic procedures to identify faults related to leakage, pressure, and system efficiency. Laboratory activities involve assembling, testing, and evaluating fluid systems using appropriate tools and simulation software. Safety practices, proper equipment handling, and maintenance procedures are emphasized throughout. Applications in automotive and industrial automation, such as lifting devices, braking systems, and automated machinery, are explored to reinforce practical understanding. As future educators, learners develop competency-based instructional materials and demonstrations aligned with technical-vocational standards. The course culminates in a functional fluid power system

project and an instructional package.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Digital Twin and Simulation in Mechatronics
4 units
102-108 hours

This course develops the fundamental and applied competencies of pre-service teachers in the modeling, simulation, and basic digital twin applications of mechatronic systems. It focuses on the integration of mechanical, electrical, electronic, and control components to create virtual representations of automated systems for analysis and performance evaluation. Pre-service teachers explore concepts such as system modeling, simulation, virtual testing, and introductory digital twin applications, including monitoring and optimization of system performance. Emphasis is placed on the use of simulation tools to analyze system behavior, detect faults, and support decision-making in automated and smart manufacturing environments. Through project-based activities, learners develop and simulate models of mechatronic systems, perform basic performance analysis, and evaluate operational scenarios. Applications in automation, robotics, and production systems are examined to reinforce practical understanding. The course also introduces the use of simulation as a teaching tool. Pre-service teachers design instructional demonstrations and competency-based activities that integrate digital modeling concepts into technical-vocational education. The course culminates in a simulation-based project and an instructional package.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Sustainable and Green Mechatronics
4 units
102-108 hours

This course develops the fundamental and applied competencies of pre-service teachers in designing and evaluating mechatronic systems that promote energy efficiency, resource conservation, and sustainable practices. It focuses on the application of sustainability principles in mechanical, electrical, electronic, and control subsystems, including efficient energy use, responsible material selection, and system optimization. Pre-service teachers explore key concepts such as energy-efficient drives and control strategies, renewable energy integration, eco-design, and basic life-cycle considerations. Emphasis is placed on reducing energy consumption, minimizing waste, and improving system performance in automated and mechatronic applications. Through laboratory and project-based activities, learners design, prototype, and test eco-efficient devices such as low-energy automation systems and renewable

energy-powered applications. They evaluate system performance and environmental impact using basic measurement and analysis techniques. The course also develops the ability to integrate sustainability concepts into technical instruction. Pre-service teachers design competency-based learning activities and demonstrations for technical-vocational education. The course culminates in a sustainable mechatronic system project and an instructional package.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Advanced Mechatronics System Integration
 4 units
 102-108 hours

This course develops the integrative competencies of pre-service teachers in designing, assembling, and managing mechatronic systems that combine mechanical, electrical, pneumatic, hydraulic, programmable logic controller (PLC), and basic Internet of Things (IoT) components. It focuses on system architecture, control logic, and communication methods required for coordinated operation in automated environments. Pre-service teachers apply principles of system integration, including signal interfacing, control sequencing, and data communication, to develop functional and reliable automated systems. Emphasis is placed on system testing, fault diagnosis, maintenance, and adherence to safety standards. Concepts in industrial communication and monitoring are introduced to support system coordination and performance evaluation. Through laboratory projects, pre-service teachers design, assemble, program, and troubleshoot small-scale automated systems using sensors, actuators, and controllers. Applications in manufacturing, robotics, and smart automation are explored to reinforce practical understanding. As future educators, pre-service teachers develop competency-based instructional activities and demonstrations that translate system integration concepts into effective technical-vocational instruction. The course culminates in a fully functional integrated mechatronic system project and an instructional package.

D.2 Major in Family and Consumer Science

D.2.1 Food Service Management

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Food Service Management
 4 units
 102-108 hours

This course equips pre-service teachers with the competencies to deliver professional food and beverage services in hospitality and institutional settings. It emphasizes the

principles and practices of preparing dining and restaurant areas for service, welcoming guests, taking and processing food and beverage orders, promoting products, and providing table and room service with efficiency and courtesy. Learners will also develop skills in handling guest concerns, ensuring customer satisfaction, and maintaining service quality aligned with industry standards. The course introduces foundational concepts in food service operations, including menu planning, service styles, workflow and layout planning, safety and sanitation, cost control, and customer relations. Pre-service teachers will explore the organizational structures and operational procedures of various food service establishments, with attention to service etiquette, hygienic practices, and compliance with food safety standards. Instruction is delivered through lectures, group discussions, role-playing exercises, observational activities, and simulated service scenarios. Practical tasks include preparing the dining room, conducting service demonstrations, simulating order-taking, and promoting food and beverage products. Case studies and industry practices are examined to provide insights into the dynamics of food service delivery and management. Assessment includes written evaluations, project presentations, and performance-based tasks such as supervised service demonstrations and customer interaction simulations. Upon completion, pre-service teachers will demonstrate readiness to teach food and beverage service competencies, support school-based hospitality enterprises, and mentor learners in providing safe, efficient, and customer-centered food and beverage services in home, school, and community settings.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Meal Management

4 units
 102-108 hours

This course equips pre-service teachers with the knowledge and skills to plan, prepare, serve, and evaluate nutritionally balanced, cost-effective meals across various food service settings. Pre-service teachers will apply principles of nutrition, budgeting, portion control, time management, and menu planning to meet client needs and operational goals. Completion prepares pre-service teachers for roles in institutional catering, restaurant operations, and food production management. The course covers meal planning fundamentals and techniques, nutritional guidelines, food budgeting and costing, portion control, and menu design. Topics include dietary requirements, seasonal menu planning, food presentation, and waste reduction strategies. Pre-service teachers will also explore cultural influences on meal

choices and customer satisfaction metrics. Instruction is delivered through lectures, group planning activities, and kitchen-based simulations. Pre-service teachers engage in menu development, meal preparation, and cost analysis exercises with emphasis on nutritional value, efficiency, and presentation. Assessment includes written tests, project-based outputs, and performance evaluations aligned with food service standards.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Bartending

4 units
 102-108 hours

This course equips pre-service teachers with the competencies to operate a bar, prepare and mix cocktails and non-alcoholic beverages, and provide basic wine service in hospitality settings. It emphasizes customer service, hygiene practices, and bar operations aligned with national competency standards. The course covers basic, common, and core competencies, including workplace communication, teamwork, safety, and professional service delivery. Core modules focus on cleaning bar areas, operating bar equipment, mixing drinks, balancing flavors and applying mixology principles, and providing wine service, with optional electives in espresso and coffee preparation. Instruction is delivered through lectures, demonstrations, and hands-on bar simulations. Pre-service teachers engage in practical tasks such as drink preparation, mock bar setup, and guest interaction, with emphasis on speed, accuracy, and presentation. Assessment includes written evaluations, performance-based tasks, and institutional competency tests aligned with national standards. Upon completion, pre-service teachers demonstrate readiness to teach bartending modules, support school-based hospitality initiatives, and guide learners in acquiring employable skills for beverage service roles in hotels, restaurants, and food and beverage establishments.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Bread and Pastry Production

4 units
 102-108 hours

This course equips pre-service teachers with foundational competencies in bread and pastry production, emphasizing food safety, proper use of baking tools, and quality standards aligned with national competency guidelines. It introduces essential techniques in preparing, baking, decorating, and packaging a variety of baked goods such as breads, pastries, cookies, and cakes suitable for home, school, and community-based settings. Pre-service teachers explore the functions of ingredients, baking procedures,

and presentation methods while applying principles of hygiene, sanitation, and cost-effective production. The course also integrates basic entrepreneurial concepts, including product costing, packaging design, and market readiness. Instruction is delivered through lectures, demonstrations, and hands-on laboratory activities focused on real-world baking applications. Pre-service teachers engage in practical tasks such as measuring ingredients, operating baking equipment, preparing baked products, and applying finishing techniques. Assessment includes performance-based tasks, written evaluations, and project presentations aligned with national competency standards. Upon completion, pre-service teachers demonstrate readiness to teach bread and pastry modules, support school-based food enterprises, and guide learners in developing baking skills for livelihood and community development.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Food and Beverage Services

4 units
 102-108 hours

This course equips pre-service teachers with the competencies to provide professional food and beverage service in various hospitality settings, including hotels, restaurants, cruise ships, and catering establishments. It emphasizes dining room preparation, guest interaction, order-taking, and service delivery, aligned with national competency standards. The course covers basic, common, and core competencies as defined by national certificate training regulations, including workplace communication, hygiene procedures, customer service, and safety practices. Core modules focus on preparing the dining area, welcoming guests, promoting food and beverage products, providing room service, and handling guest concerns. Instruction is delivered through lectures, demonstrations, and hands-on service simulations. Pre-service teachers engage in practical tasks such as table setting, order-taking, tray service, and guest handling, with an emphasis on etiquette, efficiency, and professionalism. Assessment includes written evaluations, project-based outputs, and performance tasks aligned with institutional and national standards. Upon completion, pre-service teachers demonstrate readiness to teach food and beverage service modules, support school-based hospitality initiatives, and guide learners in acquiring employable skills for the tourism and hospitality industry.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Cookery

4 units
 102-108 hours

This course equips pre-service teachers with the competencies to prepare and present hot

and cold meals, desserts, and packaged foods in hospitality and foodservice establishments. It emphasizes kitchen operations, food preparation techniques, diverse menu planning, sanitation practices, and customer service aligned with national competency standards. The course covers basic, common, and core competencies, including workplace communication, teamwork, hygiene, safety, and computer operations. Core modules focus on cleaning kitchen premises, preparing stocks, sauces, soups, appetizers, salads, sandwiches, meat, poultry, seafood, vegetables, egg and starch dishes, desserts, and packaging prepared food. Instruction is delivered through lectures, demonstrations, and hands-on kitchen activities using commercial cooking equipment. Pre-service teachers engage in practical tasks such as mise en place, cooking, plating, and food packaging, with emphasis on safety, efficiency, and presentation. Assessment includes project-based and performance-based tasks, written evaluations, and institutional competency tests aligned with national standards. Upon completion, pre-service teachers demonstrate readiness to teach cookery modules, support school-based food enterprises, and guide learners in acquiring employable skills for careers in hotels, restaurants, catering services, and institutional kitchens.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Food Processing, Packaging and Labeling
 4 units
 102-108 hours

This course equips pre-service teachers with the competencies to process food products using various preservation techniques and to package and label them in accordance with food safety and regulatory standards. Pre-service teachers develop skills in salting, curing, drying, fermenting, and thermal processing, as well as in operating basic packing equipment and inspecting packaging integrity. The course covers basic, common, and core competencies aligned with national competency standards for food processing, including food safety and sanitation, use of processing tools and equipment, environmental policies, food labeling regulations, and good manufacturing practices. Core modules focus on food preservation methods such as salting, curing, smoking, fermentation, pickling, sugar concentration, drying, and thermal application, alongside packaging techniques and labeling standards. Instruction is delivered through lectures, demonstrations, and hands-on laboratory activities using food processing and packing equipment. Pre-service teachers engage in practical tasks such as preparing raw materials, executing preservation methods, inspecting packaging materials, and applying correct product labels. Assessment

includes project-based and performance-based tasks, written evaluations, and institutional competency tests aligned with national standards. Upon completion, pre-service teachers demonstrate readiness to teach food processing and packaging modules, support school-based food enterprises, and guide learners in producing safe, market-ready food products.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Cafeteria and Catering Management
 4 units
 102-108 hours

This course equips pre-service teachers with the competencies to plan, organize, and manage cafeteria and catering operations in institutional and commercial settings. Pre-service teachers will develop skills in menu planning, food production, service coordination, financial management, and event logistics. Completion prepares pre-service teachers for supervisory roles in school cafeterias, corporate dining, and small-to medium-scale catering businesses. The course covers principles of food service systems, catering operations, and cafeteria workflow management. Topics include menu and recipe development, procurement, financial management, inventory control, staffing, food safety and sanitation, cost control, and customer service strategies. Pre-service teachers will also explore event planning, buffet setup, and service styles tailored to various client needs and occasions. Instruction is delivered through lectures, case studies, planning workshops, project-based learning, and simulated service scenarios. Pre-service teachers engage in tasks such as designing cafeteria layouts, creating catering proposals, and managing mock events with an emphasis on efficiency, sanitation, and client satisfaction. Assessment includes written tests, project presentations, and performance-based evaluations aligned with industry standards.

D.2.2 Apparel Fashion and Design Technology

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Occupational Safety and Health Policies and Procedures
 4 units
 102-108 hours

This course equips pre-service teachers with the knowledge and competencies to implement occupational safety and health (OSH) policies and procedures in technical-vocational and school-based enterprise settings. It introduces key concepts in workplace safety, hazard identification, risk assessment, emergency response, and regulatory compliance based on national and international standards. Pre-service teachers explore the roles of safety officers, legal

frameworks such as RA 11058 and DOLE guidelines, and the importance of cultivating a safety culture in educational environments. The course emphasizes developing safety plans, inspection checklists, incident-reporting protocols, and guidelines for the use of personal protective equipment (PPE). Instruction is delivered through lectures, case studies, simulations, and hands-on activities that reinforce safe practices in laboratories, workshops, and production areas. Pre-service teachers engage in tasks such as drafting OSH policies, conducting mock inspections, and facilitating safety orientations. Assessment includes written evaluations, performance-based tasks, and project presentations aligned with national competency standards. Upon completion, pre-service teachers demonstrate readiness to teach OSH modules and promote safe, responsive learning environments.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Pattern Design, Drafting, and Development

4 units
 102-108 hours

This course equips pre-service teachers with foundational knowledge and technical skills in pattern design, drafting, and development essential for garment construction and apparel production. It introduces principles of body measurements, figure analysis, pattern symbols, and drafting techniques for basic and styled garments such as dresses, uniforms, and fashion apparel. Pre-service teachers explore flat pattern drafting, manipulation, and adaptation methods to create customized designs that meet functional, aesthetic, and market-driven requirements. The course emphasizes accuracy, proportion, and fit, while integrating sustainable practices and cultural sensitivity in design. Instruction is delivered through lectures, demonstrations, and hands-on workshops focused on translating design concepts into production-ready patterns. Pre-service teachers engage in practical tasks such as drafting blocks, modifying patterns, and developing prototypes for various clothing types. Assessment includes performance-based tasks, written evaluations, and portfolio presentations aligned with national competency standards. Upon completion, pre-service teachers demonstrate readiness to teach pattern-making modules, support school-based garment enterprises, and guide learners in developing creative and technical competencies in apparel design and production.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Fabric Science and Clothing Illustration

4 units
 102-108 hours

This course equips pre-service teachers with

foundational knowledge in textile properties and clothing illustration techniques, integrating scientific understanding with creative design. It introduces the physical, chemical, and aesthetic characteristics of fabrics, including fiber classification, fabric construction, durability, and care requirements. Pre-service teachers explore how textile behavior influences garment design, functionality, and sustainability. The course also develops skills in fashion sketching, technical drawing, and visual representation of clothing concepts, emphasizing proportion, silhouette, texture, and color harmony. Instruction is delivered through lectures, laboratory analysis, and studio-based activities that simulate real-world design and teaching scenarios. Pre-service teachers engage in practical tasks such as fabric testing, swatch documentation, and rendering garments for dresses, uniforms, and fashion apparel. Assessment includes written evaluations, performance-based tasks, and design portfolios aligned with national competency standards and creative industry practices. Upon completion, pre-service teachers demonstrate readiness to teach textile and illustration modules, support school-based garment initiatives, and guide learners in exploring the intersection of material science and fashion design for livelihood and innovation.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Industrial Sewing Machine Operation
4 units
102-108 hours

This course equips pre-service teachers with the competencies to operate industrial sewing machines safely and efficiently in garment production settings. It emphasizes machine handling, maintenance, and troubleshooting, alongside the application of occupational health and safety standards. Pre-service teachers learn to identify machine parts and functions, perform threading and tension adjustments, and execute basic and advanced stitching techniques using single-needle, overlock, and other specialized machines. The course highlights productivity, precision, and quality control in mass production environments, aligned with national competency standards and industry benchmarks. Instruction is delivered through lectures, demonstrations, and hands-on training in simulated production settings. Pre-service teachers engage in practical tasks such as assembling garment components, maintaining sewing equipment, and applying standard operating procedures for speed and accuracy. Assessment includes written evaluations, performance-based tasks, and project outputs. Upon completion, pre-service teachers demonstrate readiness to teach machine operation modules, support school-based garment enterprises, and guide learners in acquiring technical sewing skills for

employment and livelihood in the garment industry.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Garments Designing and Fabric Manipulation

4 units
102-108 hours

This course equips pre-service teachers with the competencies to design garments and apply fabric manipulation techniques that enhance creativity, functionality, and craftsmanship. It introduces key concepts in fashion design, textile properties, and garment aesthetics, emphasizing the use of indigenous, recycled, and sustainable materials. Pre-service teachers explore design principles such as balance, proportion, texture, and color, and apply them through sketching, pattern-making, and enhancement methods, including pleating, smocking, gathering, appliqué, and surface embellishment. The course highlights cultural influences, personal expression, and practical construction techniques in the production of wearable, marketable clothing items. Instruction is delivered through lectures, demonstrations, and hands-on workshops focused on garment design and textile innovation. Pre-service teachers engage in tasks such as developing design portfolios, manipulating fabrics, and constructing prototypes for school, home, or community-based applications. Assessment includes written evaluations, performance-based tasks, and project presentations aligned with national competency standards. Upon completion, pre-service teachers demonstrate readiness to teach garment design modules, support livelihood initiatives, and guide learners in exploring fashion as artistic and entrepreneurial expression.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Garments Production

4 units
102-108 hours

This course equips pre-service teachers with the competencies to produce a range of garments, including dresses, uniforms, fashion apparel, and customized clothing, using appropriate tools, techniques, and standards. It emphasizes precision in measurement, pattern drafting, cutting, sewing, and finishing while adhering to occupational health and safety protocols. Pre-service teachers explore garment construction principles, textile selection, and design applications suited for school, home, and community-based production. The course highlights the cultural, functional, and economic significance of clothing while integrating sustainable practices that use indigenous and recycled materials. Instruction is delivered through lectures, demonstrations, and hands-on workshops.

	focused on producing wearable and marketable garments. Pre-service teachers engage in practical tasks such as assembling basic and styled clothing pieces, operating sewing equipment, and applying quality control procedures. Assessment includes written evaluations, performance-based tasks, and project presentations aligned with national competency standards and industry practices. Upon completion, pre-service teachers demonstrate readiness to teach garment production modules, support school-based enterprises, and guide learners in developing technical sewing skills for livelihood, fashion innovation, and community development.
Course Title Course Credits Contact Hours Prerequisite/s Description	Textile and 3D Printing 4 units 102-108 hours This course equips pre-service teachers with the competencies to integrate textile design and 3D printing technologies in the creation of innovative, functional, and sustainable products. It introduces the properties and applications of various textiles alongside the principles of additive manufacturing, emphasizing design thinking, precision, and digital fabrication. Pre-service teachers explore textile classification, pattern development, and surface enhancement techniques such as embroidery, dyeing, and heat transfer, while learning to operate 3D printers, prepare digital models, and select appropriate filaments and materials. The course highlights the convergence of traditional craft and emerging technologies for educational, livelihood, and community-based applications. Instruction is delivered through lectures, demonstrations, and hands-on activities in textile manipulation and 3D prototyping. Pre-service teachers engage in practical tasks such as designing wearable accessories, customizing fabric-based items, and producing small-scale 3D-printed components for garments or household use. Assessment includes performance-based tasks, written evaluations, and project presentations aligned with innovation, sustainability, and national standards. Upon completion, pre-service teachers demonstrate readiness to teach textile and digital fabrication modules, support STEAM-integrated learning, and guide learners in exploring creative and entrepreneurial opportunities in design and technology.
Course Title Course Credits Contact Hours Prerequisite/s Description	Production Management in the Garments Inc 4 units 102-108 hours This course equips pre-service teachers with the competencies to plan, organize, and manage garment production processes in both

small-scale and industrial settings. It emphasizes workflow optimization, quality control, resource allocation, and adherence to occupational health and safety standards. Pre-service teachers explore the structure and operations of the garment industry, including production planning, inventory management, costing, scheduling, and supervision of sewing lines. The course introduces tools and techniques for monitoring productivity, minimizing waste, and ensuring consistent output aligned with client specifications and industry benchmarks. Instruction is delivered through lectures, case studies, and hands-on simulations of production systems and garment assembly lines. Pre-service teachers engage in practical tasks such as preparing production plans, analyzing workstations, and implementing quality assurance protocols. Assessment includes written evaluations, performance-based tasks, and project presentations aligned with the national standards and industry standards. Upon completion, pre-service teachers demonstrate readiness to teach garment production modules, support school-based enterprises, and guide learners in managing efficient, scalable clothing production for livelihood and community development.

D.2.3 Hotel Operation and Tourism Services

Course Title	Fundamentals of Hotel Operations and Tourism Services
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course introduces pre-service teachers to the foundational principles, systems, and practices of hotel operations and tourism services. Pre-service teachers will explore the structure and functions of hotel departments, tourism dynamics, guest service protocols, and industry standards. Completion prepares pre-service teachers for entry-level roles in hospitality and travel sectors and serves as a gateway to specialized national standards qualifications. The course covers hotel organization, front office procedures, housekeeping operations, food and beverage service, and basic tourism concepts. Topics include customer service, reservation systems, travel coordination, cultural awareness, and sustainable tourism practices. Pre-service teachers will also examine case studies and industry trends to understand the evolving landscape of hospitality and tourism. Instruction is delivered through lectures, role-playing, group activities, and simulated hotel and travel service scenarios. Pre-service teachers engage in tasks such as guest interaction, itinerary planning, room setup, and service coordination with emphasis on professionalism, efficiency, and cultural sensitivity. Assessment includes written tests, performance tasks, and project-based

evaluations aligned with industry expectations.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Housekeeping
4 units
102-108 hours

This course equips pre-service teachers with the knowledge, skills, and values essential for delivering effective housekeeping services in residential, institutional, and hospitality settings. It introduces core competencies in cleaning procedures, room preparation, linen and laundry services, sanitation practices, and guestroom maintenance aligned with national competency standards. Pre-service teachers explore the principles of cleanliness, orderliness, and safety while applying standard operating procedures using appropriate tools, chemicals, and equipment. The course emphasizes attention to detail, time management, and customer service, preparing pre-service teachers to model professional housekeeping practices in school-based enterprises and community livelihood programs. Instruction is delivered through lectures, demonstrations, and hands-on activities in simulated housekeeping environments. Pre-service teachers engage in practical tasks such as bed-making, surface cleaning, inventory management, and workplace hazard identification. Assessment includes written evaluations, performance-based tasks, and project presentations aligned with industry benchmarks. Upon completion, pre-service teachers demonstrate readiness to teach housekeeping modules, support tourism and hospitality initiatives, and guide learners in acquiring employable skills for domestic and commercial housekeeping services.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Front Office Services
4 units
102-108 hours

This course equips pre-service teachers with the competencies to perform front office operations in commercial accommodation establishments, including reservations, guest registration, cashiering, and concierge services. It covers basic, common, and core competencies aligned with national standards, such as workplace communication, hygiene procedures, computer operations, and customer service. Pre-service teachers develop proficiency in handling guest check-in/check-out, processing reservations, operating computerized systems, conducting night audits, and delivering concierge and bell services. The course emphasizes professionalism, accuracy, and hospitality standards essential for front desk agents, receptionists, and guest service associates. Instruction is delivered through lectures, role-playing, and hands-on simulations using

	front office tools and software. Pre-service teachers engage in practical tasks that simulate hotel operations, service coordination, and guest interaction. Assessment includes written tests, performance-based tasks, and institutional competency evaluations. Upon completion, pre-service teachers demonstrate readiness to teach front office modules, support school-based hospitality initiatives, and guide learners in acquiring employable skills for careers in the tourism and accommodation industry.
Course Title Course Credits Contact Hours Prerequisite/s Description	Events Management Services 4 units 102-108 hours This course equips pre-service teachers with the competencies to plan, organize, and manage events such as conferences, functions, and social gatherings across diverse venues, including hotels, resorts, and convention centers. It covers basic, common, and core competencies aligned with national standards, including workplace communication, team leadership, negotiation, problem-solving, and the use of relevant technologies. Pre-service teachers develop skills in event proposal writing, concept creation, program development, venue selection, contractor coordination, and on-site management. The course emphasizes creativity, precision, and client satisfaction in executing events that meet professional standards. Instruction is delivered through lectures, planning workshops, and simulated event execution using industry tools and protocols. Pre-service teachers engage in practical tasks such as drafting proposals, coordinating logistics, managing teams, and handling real-time scenarios with professionalism and adaptability. Assessment includes written evaluations, project presentations, and performance-based tasks aligned with national competency standards. Upon completion, pre-service teachers demonstrate readiness to teach event management modules, support school-based and community events, and guide learners in acquiring employable skills for the tourism, hospitality, and creative industries.
Course Title Course Credits Contact Hours Prerequisite/s Description	Local Guiding Services 4 units 102-108 hours This course equips pre-service teachers with the competencies to deliver effective local guiding services in tourism, heritage, and community-based settings. It covers basic, common, and core competencies aligned with the national standards on Local Tour Guiding Services qualification, including workplace communication, customer service, itinerary

preparation, and safety procedures. Pre-service teachers develop skills in conducting guided tours, interpreting cultural and historical landmarks, managing group dynamics, and handling guest inquiries with professionalism and cultural sensitivity. The course emphasizes the importance of local knowledge, storytelling techniques, and ethical guiding practices in promoting sustainable tourism and community pride. Instruction is delivered through lectures, role-playing, field exposure, and simulated tour operations. Pre-service teachers engage in practical tasks such as preparing tour scripts, facilitating site visits, coordinating logistics, and applying safety protocols. Assessment includes written evaluations, performance-based tasks, and project presentations aligned with competency standards. Upon completion, pre-service teachers demonstrate readiness to teach local guiding modules, support school-based tourism initiatives, and guide learners in acquiring employable skills for the travel, culture, and hospitality sectors.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Travel Services

4 units
 102-108 hours

This course equips pre-service teachers with the competencies to process travel-related requests, arrange reservations, assist in securing travel documentation, and issue travel documents for independent travelers. It covers basic, common, and core competencies aligned with competency standards on Travel Services qualification, including workplace communication, hygiene procedures, computer operations, and customer service. Pre-service teachers develop skills in itinerary planning, ticketing procedures, and documentation preparation using industry-standard systems such as IATA-BSP. The course emphasizes accuracy, professionalism, and service quality in handling booking arrangements, ticket issuance, and client assistance. Instruction is delivered through lectures, system simulations, and hands-on exercises in travel documentation and reservation platforms. Pre-service teachers engage in practical tasks that simulate real-world travel agency operations and tourism service delivery. Assessment includes written tests, performance-based tasks, and institutional competency evaluations aligned with national competency standards. Upon completion, pre-service teachers demonstrate readiness to teach travel services modules, support school-based tourism initiatives, and guide learners in acquiring employable skills for travel agencies, ticketing offices, and tourism-related enterprises.

Course Title

Tourism Promotion Services

Course Credits
Contact Hours
Prerequisite/s
Description

4 units
102-108 hours

This course equips pre-service teachers with the competencies to promote tourism destinations, products, and services using technology-based platforms and customer-focused sales techniques. It covers basic, common, and core competencies aligned with the Tourism Promotion Services National Competency qualification, including workplace communication, teamwork, professionalism, hygiene procedures, and computer operations. Pre-service teachers develop skills in sourcing and interpreting travel information, operating automated information systems, providing destination advice, accessing product details, and presenting tourism packages. The course emphasizes accuracy, creativity, and customer engagement in delivering promotional services across digital and physical platforms. Instruction is delivered through lectures, system simulations, and hands-on promotional activities that simulate real-world tourism marketing scenarios. Pre-service teachers engage in practical tasks such as creating travel brochures, managing digital content, and coordinating promotional campaigns. Assessment includes written tests, performance-based tasks, and institutional competency evaluations aligned with the national competency standards. Upon completion, pre-service teachers demonstrate readiness to teach tourism promotion modules, support school-based tourism initiatives, and guide learners in acquiring employable skills for travel agencies, tourism offices, and promotional departments.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Tour Guiding Services
4 units
102-108 hours

This course equips pre-service teachers with the competencies to deliver professional tour guiding services in cultural, historical, ecological, and community-based tourism settings. It covers basic, common, and core competencies aligned with the national competency standards on the Tour Guiding Services qualification, including workplace communication, customer service, hygiene procedures, and safety protocols. Pre-service teachers develop skills in itinerary interpretation, tour commentary, group management, and guest assistance, with emphasis on cultural sensitivity, storytelling techniques, and ethical guiding practices. The course highlights the importance of promoting local heritage, sustainable tourism, and positive visitor experiences. Instruction is delivered through lectures, role-playing, field exposure, and simulated tour operations using industry-standard tools and protocols.

	Pre-service teachers engage in practical tasks such as preparing tour scripts, facilitating guided visits, managing logistics, and handling real-time guest interactions. Assessment includes written evaluations, performance-based tasks, and institutional competency checks aligned with the national competency standards. Upon completion, pre-service teachers demonstrate readiness to teach tour guiding modules, support school-based tourism initiatives, and guide learners in acquiring employable skills for the travel, heritage, and hospitality sectors.
Course Title	Tour Packaging (Fit Ad Hoc Domestic) Servi
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the competencies to design, package, and promote customized tour arrangements for Free Independent Travelers (FIT), ad hoc groups, and domestic markets. It covers basic, common, and core competencies aligned with the national competency on Tour Packaging Services qualification, including workplace communication, customer service, hygiene procedures, and computer operations. Pre-service teachers develop skills in sourcing travel information, preparing itineraries, costing tour components, coordinating with suppliers, and packaging inclusive travel services tailored to client preferences. The course emphasizes creativity, accuracy, and market responsiveness in developing tour products that reflect local culture, sustainability, and customer satisfaction. Instruction is delivered through lectures, planning workshops, and hands-on simulations using industry-standard tools and platforms. Pre-service teachers engage in practical tasks such as drafting tour proposals, preparing quotations, and presenting customized tour packages for leisure, educational, or corporate travel. Assessment includes written tests, performance-based tasks, and institutional competency evaluations aligned with the national competency standards. Upon completion, pre-service teachers demonstrate readiness to teach tour packaging modules, support school-based tourism initiatives, and guide learners in developing employable skills for travel agencies, tour operators, and local tourism enterprises.

D.2.4 Aesthetic, Health, and Wellness Services

Course Title	Fundamentals of Aesthetic, Health, and Well Services
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with foundational competencies in aesthetic health

and wellness services, integrating beauty care, massage therapy, and personal grooming practices. It covers basic, common, and core competencies aligned with the national competency standards on beauty care and wellness massage qualifications, including workplace communication, hygiene and sanitation, client consultation, and safety procedures. Pre-service teachers develop skills in facial treatments, skin care, makeup application, nail care, body massage, and spa therapies using appropriate tools, equipment, and wellness products. The course emphasizes holistic well-being, client comfort, and professional ethics in delivering non-invasive services that enhance appearance, relaxation, and self-care. Instruction is delivered through lectures, demonstrations, and hands-on simulations in salon and wellness environments. Pre-service teachers engage in practical tasks such as performing facials, applying makeup, conducting massage routines, and managing client records with attention to safety, precision, and customer satisfaction. Assessment includes written evaluations, performance-based tasks, and institutional competency checks aligned with the national competency standards. Upon completion, pre-service teachers demonstrate readiness to teach aesthetic health and wellness modules, support school-based livelihood initiatives, and guide learners in acquiring employable skills for salons, spas, and wellness centers.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Hairdressing and Barbering Services

4 units
 102-108 hours

This course equips pre-service teachers with the competencies to perform professional hairdressing and barbering services in salon, school-based enterprise, and community settings. It covers basic, common, and core competencies aligned with the national competency standards on hairdressing and barbering qualifications, including workplace communication, hygiene procedures, customer service, and salon operations. Pre-service teachers develop skills in haircutting, hairstyling, hair coloring, shaving, scalp treatment, and grooming techniques tailored to diverse client needs. The course emphasizes precision, creativity, and safety in delivering hair care services that reflect current trends, cultural sensitivity, and industry standards. Instruction is delivered through lectures, demonstrations, and hands-on salon simulations using professional tools and products. Pre-service teachers engage in practical tasks such as client consultation, style execution, and aftercare service with attention to hygiene, ergonomics, and customer satisfaction. Assessment includes written evaluations, performance-based tasks, and institutional competency checks aligned

with the national competency standards. Upon completion, pre-service teachers demonstrate readiness to teach hairdressing and barbering modules, support livelihood initiatives, and guide learners in acquiring employable skills for salon work, personal grooming, and entrepreneurial ventures.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Make Up and Skin Care Services

4 units
102-108 hours

This course equips pre-service teachers with the competencies to perform professional makeup application and skin care services in salon, school-based enterprise, and community settings. It covers basic, common, and core competencies aligned with the national competency standards on beauty care qualifications, including workplace communication, hygiene and sanitation, client consultation, and product knowledge. Pre-service teachers develop skills in facial treatments, skin analysis, makeup design, corrective techniques, and day-to-evening looks using appropriate tools, cosmetics, and procedures. The course emphasizes safety, precision, creativity, and customer satisfaction in delivering beauty services that enhance personal appearance and well-being. Instruction is delivered through lectures, demonstrations, and hands-on salon simulations using industry-standard products and equipment. Pre-service teachers engage in practical tasks such as performing facials, applying various makeup styles, and preparing clients for special occasions. Assessment includes written evaluations, performance-based tasks, and institutional competency checks aligned with TESDA competency standards. Upon completion, pre-service teachers demonstrate readiness to teach beauty care modules, support school-based wellness initiatives, and guide learners in acquiring skills that are employable in the beauty, spa, and personal grooming industries.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Nail Care Services

4 units
102-108 hours

This course equips pre-service teachers with the competencies to perform professional nail care services in salon, school-based enterprise, and community settings. It covers basic, common, and core competencies aligned with the national competency on beauty care qualification, including workplace communication, hygiene and sanitation, client consultation, and product knowledge. Pre-service teachers develop skills in manicure, pedicure, nail cleaning, nail shaping, hand and foot spa treatments, and basic nail art using appropriate tools,

equipment, and cosmetic products. The course emphasizes safety, precision, and customer satisfaction in delivering nail care services that promote personal grooming and wellness. Instruction is delivered through lectures, demonstrations, and hands-on salon simulations using industry-standard materials and protocols. Pre-service teachers engage in practical tasks such as performing nail treatments, applying decorative techniques, and maintaining professional salon hygiene. Assessment includes written evaluations, performance-based tasks, and institutional competency checks aligned with the national competency standards. Upon completion, pre-service teachers demonstrate readiness to teach nail care modules, support school-based wellness initiatives, and guide learners in acquiring employable skills for salons, spas, and personal care enterprises.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Healthcare Services

4 units
 102-108 hours

This course equips pre-service teachers with the competencies to deliver basic healthcare services in community, institutional, and school-based settings. It covers basic, common, and core competencies aligned with the national competency standards on the Healthcare Services qualification, including workplace communication, hygiene and sanitation, vital signs monitoring, and client care procedures. Pre-service teachers develop skills in assisting with daily living activities, preparing clients for medical procedures, supporting mobility and nutrition, and maintaining accurate health records. The course emphasizes empathy, safety, and professionalism in providing care to individuals across age groups and health conditions. Instruction is delivered through lectures, demonstrations, and hands-on simulations using standard healthcare tools and protocols. Pre-service teachers engage in practical tasks such as taking vital signs, assisting with hygiene routines, and applying infection control measures. Assessment includes written evaluations, performance-based tasks, and institutional competency checks aligned with the national competency standards. Upon completion, pre-service teachers demonstrate readiness to teach healthcare service modules, support school-based wellness initiatives, and guide learners in acquiring employable skills for caregiving, community health work, and institutional support roles.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Wellness Massage and Spa Services

4 units
 102-108 hours

This course equips pre-service teachers with the competencies to perform wellness

massage and spa services in salon, spa, school-based enterprise, and community wellness settings. It covers basic, common, and core competencies aligned with the national competency standards on Wellness Massage qualification, including workplace communication, hygiene and sanitation, client consultation, and safety procedures. Pre-service teachers develop skills in Swedish massage, Shiatsu, foot reflexology, and spa treatments using appropriate tools, equipment, and therapeutic products. The course emphasizes relaxation, client comfort, and holistic well-being while promoting professionalism, ethical practice, and cultural sensitivity. Instruction is delivered through lectures, demonstrations, and hands-on simulations in massage and spa environments. Pre-service teachers engage in practical tasks such as preparing treatment areas, performing massage techniques, and applying spa therapies with attention to client needs and safety protocols. Assessment includes written evaluations, performance-based tasks, and institutional competency checks aligned with the national competency standards. Upon completion, pre-service teachers demonstrate readiness to teach wellness massage modules, support school-based wellness initiatives, and guide learners in acquiring employable skills for spas, wellness centers, and personal care enterprises.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Aesthetic Services

4 units
 102-108 hours

This course equips pre-service teachers with the competencies to perform professional aesthetic services focused on facial care, body treatments, and non-invasive beauty procedures in salon, spa, and wellness settings. It covers basic, common, and core competencies aligned with the national competency standards on beauty care qualification, including workplace communication, hygiene and sanitation, client consultation, and product application. Pre-service teachers develop skills in facial cleansing, exfoliation, mask application, massage techniques, and body care treatments using appropriate tools, equipment, and cosmetic products. The course emphasizes safety, precision, and client satisfaction in enhancing skin health, appearance, and overall well-being. Instruction is delivered through lectures, demonstrations, and hands-on simulations using industry-standard protocols and wellness technologies. Pre-service teachers engage in practical tasks such as performing facials, applying skin treatments, and managing client records with attention to ethical practice and professional standards. Assessment includes written evaluations,

performance-based tasks, and institutional competency checks aligned with the national competency standards. Upon completion, pre-service teachers demonstrate readiness to teach aesthetic service modules, support school-based wellness initiatives, and guide learners in acquiring employable skills for salons, spas, and personal care enterprises.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Massage Therapy

4 units
 102-108 hours

This course equips pre-service teachers with the competencies to perform therapeutic massage services that promote relaxation, stress relief, and physical wellness in spa, clinic, and school-based enterprise settings. It covers basic, common, and core competencies aligned with the national standard on Wellness Massage qualification, including workplace communication, hygiene and sanitation, client consultation, and safety procedures. Pre-service teachers develop skills in Swedish massage, Shiatsu, foot reflexology, and other non-invasive techniques using appropriate tools, equipment, and wellness products. The course emphasizes professionalism, client comfort, and ethical practice in delivering massage therapy tailored to individual needs. Instruction is delivered through lectures, demonstrations, and hands-on simulations in massage environments that reflect industry standards. Pre-service teachers engage in practical tasks such as preparing treatment areas, performing massage routines, and applying aftercare protocols with attention to safety and client satisfaction. Assessment includes written evaluations, performance-based tasks, and institutional competency checks aligned with the national competency standards. Upon completion, pre-service teachers demonstrate readiness to teach massage therapy modules, support school-based wellness initiatives, and guide learners in acquiring employable skills for spas, wellness centers, and therapeutic care enterprises.

D.3 Major in Information and Communications Technology

D.3.1 Animation

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Fundamentals of Animation Principles

4 units
 102-108 hours

This course equips pre-service teachers with foundational knowledge and skills in the core principles of animation, including timing, spacing, squash and stretch, anticipation, staging, and exaggeration. It introduces the historical development of animation and its role as a powerful medium for storytelling, communication, and education. Pre-service

teachers explore the basic techniques of traditional and digital animation, focusing on creating believable movement, weight, and emotion in animated characters and objects. Through hands-on activities such as flipbook creation, keyframe animation, and simple motion studies, pre-service teachers develop technical proficiency and creative problem-solving skills. Assignments include designing short animated sequences, analyzing animations for their use of principles, and reflecting on their creative processes. Materials such as animation software, drawing tools, and reference videos are utilized to enhance learning. Assessments include project-based outputs, peer reviews, and practical demonstrations of animation principles. By the end of the course, pre-service teachers will have created a portfolio of basic animations that reflect their understanding of fundamental animation techniques, preparing them to progress to more advanced animation courses

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Storyboarding and Visual Narratives

4 units
 102-108 hours

This course equips pre-service teachers with the essential skills and knowledge to conceptualize and create compelling visual stories through the art of storyboarding. It emphasizes the importance of storytelling in animation and multimedia production, focusing on elements such as composition, visual sequence, camera angles, pacing, and character development. Pre-service teachers explore how to translate written scripts into visual narratives that effectively communicate ideas and emotions to an audience. Through hands-on activities, they practice sketching storyboards, planning shot sequences, and organizing scenes to convey a coherent story. Assignments include creating storyboards for short animations, analyzing existing visual narratives, and collaborating on group projects to develop storytelling techniques. Materials such as storyboard templates, drawing tools, and digital software are utilized to support learning. Assessments include completed storyboards, peer critiques, and reflective journals on the storytelling process. By the end of the course, pre-service teachers will have developed a portfolio of storyboards that demonstrate their ability to craft engaging and visually dynamic narratives for educational and creative purposes.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

3D Modeling and Rendering

4 units
 102-108 hours

This course equips pre-service teachers with the foundational knowledge and technical skills to design, create, and render realistic 3D

models for various applications in education, multimedia, and creative industries. It introduces the principles of 3D modeling, including geometry, topology, texturing, lighting, and rendering techniques, while emphasizing the importance of precision, detail, and creativity in digital design. Pre-service teachers explore the use of industry-standard software such as Blender, Maya, or 3ds Max to create 3D models that are visually compelling and functional. Through hands-on activities, they practice constructing 3D objects, applying materials and textures, and setting up lighting for realistic rendering. Assignments include creating 3D models of objects, environments, or characters, as well as rendering high-quality images for a professional portfolio. Materials such as modeling software, reference images, and video tutorials are utilized to enhance learning. Assessments include project-based outputs, peer evaluations, and practical demonstrations of 3D modeling and rendering techniques. By the end of the course, pre-service teachers will have developed a portfolio showcasing their ability to create high-quality 3D models and renderings, preparing them for more advanced animation and design courses.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Character Design and Rigging

4 units
 102-108 hours

This course equips pre-service teachers with the creative and technical skills to design original characters and prepare them for animation through effective rigging techniques. It emphasizes the principles of character design, including anatomy, proportions, personality development, and visual storytelling, while exploring how design choices impact character movement and emotional expression. Pre-service teachers learn the process of creating character concepts, refining sketches, and developing detailed digital models. They also gain hands-on experience in rigging, focusing on building skeletal structures, setting up controls, and ensuring realistic and fluid motion for animation. Assignments include designing character sheets, creating rigged 3D models, and testing character movements through animation sequences. Materials such as design software, anatomy references, and rigging tutorials are provided to support learning. Assessments include project-based outputs, peer critiques, and practical demonstrations of character design and rigging techniques. By the end of the course, pre-service teachers will have developed a portfolio of original character designs and functional rigs, showcasing their ability to merge creativity and technical expertise in preparation for advanced animation projects.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Motion Graphics and Special Effects

4 units
102-108 hours

This course equips pre-service teachers with the skills to create dynamic motion graphics and visually engaging special effects for use in multimedia, education, and entertainment. It emphasizes the principles of motion design, animation timing, and the integration of visual effects to enhance storytelling and communication. Pre-service teachers explore the use of industry-standard tools such as Adobe After Effects, Cinema 4D, or similar software to design motion graphics and apply special effects like transitions, particle systems, and compositing. Through hands-on activities, they create animated titles, kinetic typography, and visual effects sequences that bring static visuals to life. Assignments include designing motion graphics projects, analyzing the use of effects in multimedia, and collaborating on group projects to simulate real-world production workflows. Materials such as software tutorials, project templates, and reference videos are utilized to support learning. Assessments include project-based outputs, peer critiques, and practical demonstrations of motion graphics and special effects techniques. By the end of the course, pre-service teachers will have developed a portfolio of motion graphics and special effects projects, showcasing their ability to produce visually compelling and professional-quality animations.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Advanced Animation Techniques (2D and 3D)

4 units
102-108 hours

This course equips pre-service teachers with advanced skills and techniques in creating professional-quality 2D and 3D animations for various applications in education, multimedia, and entertainment. It focuses on complex animation processes such as dynamic simulations, particle effects, advanced rigging, character performance, and realistic motion. Pre-service teachers explore the integration of 2D and 3D elements to create hybrid animations, emphasizing innovative approaches and problem-solving strategies in animation production. They use industry-standard software to experiment with advanced workflows and tools, optimizing their animation processes for efficiency and quality. Hands-on activities include creating polished animation sequences, integrating effects, and refining character movements for realism and emotion. Assignments involve producing advanced 2D and 3D animations, analyzing professional animations for technique, and participating in collaborative projects. Materials such as advanced animation software, reference videos, and tutorials are

utilized to enhance learning. Assessments include project-based outputs, peer reviews, and practical demonstrations of advanced animation techniques. By the end of the course, pre-service teachers will have developed a professional portfolio of complex animations, demonstrating their mastery of advanced 2D and 3D animation skills.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Game Animation Development

4 units
102-108 hours

This course equips pre-service teachers with the specialized skills and knowledge needed to create engaging and interactive animations for video games. It emphasizes the principles of game animation, including character movement, environmental interactions, physics-based animations, and player feedback systems. Pre-service teachers explore the unique challenges of animating for real-time game engines, focusing on optimizing animations for performance and responsiveness. Using industry-standard tools such as Unity, Unreal Engine, or similar software, they learn to design and implement animations for characters, objects, and environments within interactive gaming contexts. Hands-on activities include creating walk cycles, combat animations, environmental effects, and cutscenes tailored for game mechanics. Assignments involve developing animated assets for game prototypes, analyzing animations in existing games, and collaborating on group projects to simulate a game development pipeline. Materials such as game engines, animation software, and reference videos are utilized to support learning. Assessments include project-based outputs, peer critiques, and practical demonstrations of game animation workflows. By the end of the course, pre-service teachers will have developed a portfolio of game-ready animations, showcasing their ability to create immersive and dynamic experiences for interactive media.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Animation for Emerging Technologies (AR/V

4 units
102-108 hours

This course equips pre-service teachers with the skills and knowledge to design and implement animations for emerging technologies such as augmented reality (AR) and virtual reality (VR). It emphasizes the unique requirements of immersive environments, including spatial awareness, interactivity, and user experience design. Pre-service teachers explore the integration of animation into AR/VR platforms, focusing on creating dynamic and responsive animations that enhance engagement and realism. Using

industry-standard tools such as Unity, Unreal Engine, or AR/VR development kits, they learn techniques for animating 3D objects, environments, and characters within interactive and immersive spaces. Hands-on activities include designing animations for AR applications, developing VR simulations, and testing user interactions in virtual environments. Assignments involve creating prototypes for AR/VR projects, analyzing successful animations in emerging technologies, and collaborating on team-based projects. Materials such as AR/VR headsets, development software, and tutorials are utilized to support learning. Assessments include project-based outputs, peer critiques, and practical demonstrations of AR/VR animation techniques. By the end of the course, pre-service teachers will have developed a portfolio of animations tailored for AR/VR technologies, showcasing their ability to innovate within cutting-edge digital platforms.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Animation Production and Project Managem
 4 units
 102-108 hours

This course equips pre-service teachers with the skills and knowledge to manage the end-to-end process of animation production while applying effective project management strategies. It focuses on the animation production pipeline, including pre-production, production, and post-production stages, as well as the planning, organization, and execution of animation projects. Pre-service teachers explore techniques for scheduling, resource allocation, team collaboration, and quality control to ensure the successful completion of animation projects. They also learn to use project management tools and software to streamline workflows and track progress. Hands-on activities include creating production schedules, managing animation teams, and producing short animated projects from concept to final output. Assignments involve developing project proposals, managing collaborative animation tasks, and presenting completed works for critique. Materials such as project management templates, animation software, and case studies of successful productions are utilized to support learning. Assessments include project-based outputs, peer evaluations, and reflective documentation of the production process. By the end of the course, pre-service teachers will have developed a comprehensive understanding of animation production and project management, preparing them to lead and execute professional animation projects effectively.

Course Title
Course Credits

Ethics and Sustainability in Animation
 4 units

Contact Hours
Prerequisite/s
Description

102-108 hours

This course equips pre-service teachers with the knowledge and awareness to apply ethical practices and sustainable approaches in the field of animation. It emphasizes the importance of ethical decision-making, cultural sensitivity, and social responsibility in creating animations that respect diverse audiences and promote positive values. Pre-service teachers explore topics such as intellectual property rights, fair use, representation in media, and the environmental impact of animation production. They also examine strategies for reducing the carbon footprint of animation workflows through sustainable practices, such as optimizing resources and adopting eco-friendly tools. Hands-on activities include analyzing case studies of ethical dilemmas in animation, creating socially responsible content, and proposing sustainable production plans. Assignments involve reflective essays, group discussions, and the development of an ethical framework for animation projects. Materials such as industry guidelines, academic articles, and multimedia resources are utilized to enhance learning. Assessments include written outputs, peer critiques, and presentations on ethical and sustainable practices. By the end of the course, pre-service teachers will have developed a deeper understanding of their role as socially responsible animators, equipped to create meaningful and sustainable content in their professional careers.

D.3.2 Visual Graphic Design

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Principles of Graphic Design and Branding

4 units
102-108 hours

This course equips pre-service teachers with foundational knowledge and skills to create visually compelling and effective designs that communicate clear messages and build strong brand identities. It emphasizes the principles of design, including color theory, typography, composition, and visual hierarchy, which are essential for producing professional-quality graphics. Pre-service teachers explore the role of branding in establishing identity, fostering audience engagement, and building trust, focusing on the development of logos, brand guidelines, and cohesive visual systems. Through hands-on activities such as logo creation, brand storytelling, and mood board development, pre-service teachers apply design thinking and problem-solving strategies to produce innovative solutions. Assignments include case studies, critiques, and collaborative projects that simulate real-world branding challenges. Materials such as design software tutorials and branding frameworks are used to support learning,

while assessments include portfolio submissions and project presentations. By the end of the course, pre-service teachers gain the ability to integrate design principles and branding strategies into their teaching practice and professional endeavors.

Course Title	Typography and Layout Design
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the knowledge and skills to effectively use typography and layout design in creating visually appealing and functional communication materials. It emphasizes the study of type anatomy, font selection, hierarchy, spacing, and grid systems to ensure clarity, readability, and aesthetic harmony in design. Pre-service teachers explore the impact of typography and layout on visual storytelling and audience engagement, focusing on both print and digital media. Through hands-on activities such as designing posters, brochures, and editorial layouts, pre-service teachers apply typographic principles and layout techniques to create professional-quality outputs. Assignments include analyzing design samples, creating mock-ups, and developing client-centered projects. Materials such as design software, style guides, and layout templates support learning, while assessments include project-based evaluations and portfolio submissions. By the end of the course, pre-service teachers develop a critical eye for typography and layout design, enabling them to create materials that are both visually engaging and effective for teaching and professional applications.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Digital Publishing and Print Media Production
4 units
102-108 hours

This course equips pre-service teachers with the skills and knowledge to design and produce professional-quality digital and print publications that effectively communicate ideas and engage audiences. It emphasizes the principles of editorial design, layout composition, typography, and visual storytelling, focusing on creating materials such as magazines, books, brochures, and newsletters. Pre-service teachers explore the technical aspects of print media production, including pre-press preparation, color management, and file optimization, alongside digital publishing techniques for e-books, interactive PDFs, and online publications. Through hands-on activities, pre-service teachers use industry-standard software such as Adobe InDesign and QuarkXPress to develop layouts and prepare materials for both print and digital platforms. Assignments include creating publication mock-ups, designing multi-page layouts, and analyzing publication case studies, supported by tutorials, design templates, and production guides. Assessments include project-based evaluations, peer critiques, and portfolio submissions featuring completed print and digital media projects. By the end of the course, pre-service teachers will have

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

developed a portfolio of high-quality publications that demonstrate their ability to combine technical precision, creative design, and storytelling for diverse audiences and professional contexts.

Advanced Digital Illustration Techniques

4 units
102-108 hours

This course equips pre-service teachers with advanced skills and techniques in digital illustration to create visually impactful and meaningful artwork for various applications. It emphasizes the use of industry-standard software to develop complex illustrations that effectively communicate ideas and concepts. Pre-service teachers explore advanced methods in vector and raster graphics, digital painting, layering, texturing, and color grading to enhance their creative outputs. The course focuses on the application of these techniques to develop illustrations for branding, editorial content, advertising, and educational materials. Through hands-on activities, pre-service teachers engage in creating original illustrations, mastering the creative process from conceptualization to final output. Assignments include digital sketching, character design, and thematic illustrations, supported by materials such as software tutorials and design references. Assessments include project-based evaluations, peer critiques, and portfolio submissions. By the end of the course, pre-service teachers will have developed a professional portfolio of digital illustrations that showcase their technical expertise, creativity, and ability to adapt their skills to diverse design challenges.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Design for Social Media and Marketing Campaigns

4 units
102-108 hours

This course equips pre-service teachers with the knowledge and skills to create visually impactful designs and strategies for social media platforms and marketing campaigns. It emphasizes the principles of digital marketing, branding, and visual storytelling, focusing on audience engagement, platform-specific design requirements, and cohesive campaign execution. Pre-service teachers explore techniques for creating graphics, videos, and promotional content tailored to platforms such as Instagram, Facebook, TikTok, and YouTube, while integrating emerging trends like influencer marketing and data-driven design. Through hands-on activities, pre-service teachers develop social media templates, create content calendars, and design marketing materials for real-world scenarios. Assignments include designing and executing mock campaigns, analyzing successful marketing strategies, and

	producing multimedia content supported by tutorials, case studies, and branding frameworks. Assessments include project-based evaluations, peer critiques, and portfolio submissions showcasing completed social media designs and campaign strategies. By the end of the course, pre-service teachers will have gained the ability to create effective, visually compelling, and results-oriented social media and marketing materials for professional and educational applications.
Course Title	Packaging and Product Design
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the knowledge and skills to design innovative and functional packaging solutions that enhance product appeal and usability. It emphasizes the principles of packaging design, including form, structure, materials, branding, and sustainability, to create designs that balance aesthetics, practicality, and environmental responsibility. Pre-service teachers explore the relationship between packaging and consumer behavior, focusing on how design influences purchasing decisions and brand perception. Through hands-on activities such as prototyping, material selection, and 3D mock-up creation, pre-service teachers design packaging for various industries, including food, cosmetics, and electronics. Assignments include conceptualizing product designs, creating packaging prototypes, and analyzing real-world packaging case studies. Materials such as design software tutorials, packaging templates, and sustainability guidelines support learning, while assessments include project-based evaluations, peer critiques, and portfolio submissions. By the end of the course, pre-service teachers will have developed a portfolio of creative and functional packaging designs that demonstrate their ability to integrate design principles, branding strategies, and sustainability practices into professional and educational contexts.
Course Title	Motion Design and Interactive Media
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the skills to create dynamic motion graphics and interactive media that engage audiences across various platforms. It emphasizes the principles of animation, visual storytelling, and interactivity, focusing on techniques such as keyframing, transitions, timing, and visual effects. Pre-service teachers explore the use of industry-standard software, such as Adobe After Effects, Blender, and Adobe Animate, to

design and produce animations, explainer videos, and interactive multimedia content. The course highlights the role of motion design in education, marketing, and entertainment, encouraging pre-service teachers to create content that communicates effectively and creatively. Through hands-on activities, pre-service teachers develop storyboards, animated sequences, and interactive projects. Assignments include creating animated infographics, short motion videos, and interactive learning materials, supported by tutorials, design guides, and case studies. Assessments include project-based evaluations, peer reviews, and portfolio submissions showcasing completed motion and interactive media projects. By the end of the course, pre-service teachers will have developed the technical expertise and creative confidence to produce professional-quality motion and interactive designs for educational and professional applications.

Course Title	User Interface and User Experience (UI/UX) Design
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the knowledge and skills to design user-centered interfaces and experiences that enhance digital interactions. It emphasizes the principles of user interface (UI) design, including visual hierarchy, navigation, usability, and accessibility, as well as user experience (UX) design processes such as user research, wireframing, prototyping, and usability testing. Pre-service teachers explore how effective UI/UX design can improve engagement, functionality, and satisfaction for diverse users across web, mobile, and digital platforms. Through hands-on activities, pre-service teachers create wireframes, interactive prototypes, and design mock-ups using industry-standard tools such as Figma, Adobe XD, and Sketch. Assignments include user research analysis, usability evaluations, and iterative design projects, supported by tutorials, design templates, and case studies of successful UI/UX designs. Assessments include project-based evaluations, peer reviews, and portfolio submissions featuring completed UI/UX design projects. By the end of the course, pre-service teachers will have developed the ability to create intuitive, visually appealing, and functional digital interfaces, preparing them for real-world applications in education and professional practice.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Visual Design for AR/VR Experiences

4 units
102-108 hours

This course equips pre-service teachers with the knowledge and skills to create immersive visual designs for augmented reality (AR) and virtual reality (VR) applications. It emphasizes the principles of spatial design, 3D modeling, interactive storytelling, and user-centered design to develop engaging and functional AR/VR environments. Pre-service teachers explore the use of cutting-edge tools to design interactive prototypes and immersive

experiences for education, entertainment, and marketing purposes. The course highlights the importance of accessibility, usability, and innovation in crafting AR/VR content that meets industry standards and enhances user engagement. Through hands-on activities, pre-service teachers design virtual environments, develop interactive elements, and prototype AR/VR applications. Assignments include creating 3D models, designing immersive scenarios, and analyzing successful AR/VR projects, supported by software tutorials and design guides. Assessments include project-based evaluations, peer critiques, and portfolio submissions featuring completed AR/VR designs. By the end of the course, pre-service teachers will have developed a portfolio of immersive visual designs that showcase their ability to leverage AR/VR technologies for educational and professional applications.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Ethics and Intellectual Property in Graphic D
 4 units
 102-108 hours

This course equips pre-service teachers with a comprehensive understanding of ethical practices and intellectual property laws in the field of graphic design. It emphasizes the importance of protecting creative works and maintaining professional integrity through the exploration of topics such as copyright, trademarks, patents, fair use, and licensing. Pre-service teachers examine real-world scenarios and case studies to analyze ethical dilemmas, cultural sensitivity, plagiarism, and responsible use of digital tools and resources. The course also highlights the significance of promoting inclusivity and respecting diverse perspectives in design practices. Through hands-on activities, pre-service teachers engage in ethical decision-making exercises, intellectual property research, and reflective discussions. Assignments include creating design projects that comply with intellectual property standards, evaluating case studies, and drafting ethical guidelines for professional practice. Materials such as legal frameworks, design ethics references, and intellectual property resources support learning, while assessments include written reflections, project evaluations, and portfolio submissions. By the end of the course, pre-service teachers will have developed a strong ethical foundation and the ability to navigate intellectual property laws responsibly, preparing them for professional success in the design industry and educational contexts.

D.3.3 Computer and Web Programming

Course Title
Course Credits

Fundamentals of Programming Logic and Algorithms
 4 units

Contact Hours
Prerequisite/s
Description

102-108 hours

This course equips pre-service teachers with foundational knowledge and skills in computational thinking, programming logic, and algorithm design to solve real-world problems effectively. It introduces pre-service teachers to essential concepts such as flowcharting, pseudocoding, and structured programming, emphasizing the importance of logical reasoning and systematic problem-solving. Pre-service teachers explore topics like recursion, iteration, modularization, and debugging, which are critical for developing efficient and optimized solutions. The course highlights the relevance of algorithms in software development and their application in various domains, preparing pre-service teachers to guide learners in developing programming skills. Through hands-on activities, coding exercises, and collaborative projects, pre-service teachers apply theoretical concepts to practical scenarios, enhancing their technical proficiency and critical thinking. Assignments include writing and testing basic programs, creating algorithmic solutions, and analyzing case studies. Assessments focus on the accuracy, efficiency, and optimization of their work, ensuring mastery of foundational programming concepts. By the end of the course, pre-service teachers develop confidence in their ability to design and implement algorithms, laying the groundwork for advanced programming courses and effective ICT teaching practices.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Object-Oriented Programming (OOP)

4 units

102-108 hours

This course equips pre-service teachers with the knowledge and skills to design, develop, and implement modular, reusable, and scalable software solutions using the object-oriented programming paradigm. It introduces pre-service teachers to core principles such as encapsulation, inheritance, polymorphism, and abstraction, emphasizing how these concepts enhance code organization, maintainability, and efficiency. Pre-service teachers explore topics such as class and object creation, method overloading, and the use of design patterns to solve complex programming challenges. The course highlights the practical applications of OOP in modern software development and its role in creating robust systems across various industries. Through hands-on coding exercises, debugging activities, and collaborative projects, pre-service teachers apply theoretical concepts to create functional programs. Assignments include developing object-oriented applications, analyzing case studies, and implementing real-world solutions.

using industry-standard programming languages such as Java, C++, or Python. Assessments focus on the correctness, efficiency, and scalability of their code to ensure mastery of OOP principles. By the end of the course, pre-service teachers are equipped to apply object-oriented programming techniques in their teaching and professional practice, building a strong foundation for advanced software development.

Course Title

Web Application Development (Frontend and Backend)

Course Credits

4 units

Contact Hours

102-108 hours

Prerequisite/s

Description

This course equips pre-service teachers with the knowledge and skills to design, develop, and deploy dynamic web applications by integrating frontend and backend technologies. It introduces pre-service teachers to essential web development concepts, including responsive design, user experience (UX), and web accessibility standards. Topics include HTML, CSS, and JavaScript for creating interactive and visually appealing frontend interfaces, as well as server-side programming using technologies such as Node.js, PHP, or Python for backend development. Pre-service teachers explore database integration, API development, and web security practices to ensure robust and scalable applications. The course emphasizes the importance of creating user-centered designs and maintaining secure and efficient web systems. Through hands-on coding exercises, collaborative projects, and real-world simulations, pre-service teachers develop full-stack web applications that address practical needs. Assignments include designing responsive websites, implementing backend functionality, and deploying applications on cloud-based platforms. Assessments focus on functionality, usability, and adherence to industry standards. By the end of the course, pre-service teachers gain the confidence and expertise to create professional-grade web applications and effectively teach web development concepts in educational settings.

Course Title

Database Management and SQL Programming

Course Credits

4 units

Contact Hours

102-108 hours

Prerequisite/s

Description

This course provides pre-service teachers with comprehensive knowledge and practical skills in database management and Structured Query Language (SQL) programming, with a focus on Oracle database technology. The course covers the fundamental concepts and components of database management systems, emphasizing the use of SQL syntax for data manipulation and retrieval.

	Pre-service teachers learn to execute basic SQL commands, apply multiple row functions, joins, subqueries, and substitution variables to retrieve and display data from multiple tables, and create well-structured databases. The course also focuses on advanced Data Manipulation Language (DML) commands for managing databases, including the use of constraints, views, database objects, user access roles, and set operators to combine query results. Pre-service teachers gain hands-on experience in connecting programming languages to SQL databases, effectively performing Create, Read, Update, and Delete (CRUD) operations. Additionally, the course introduces PL/SQL programming, enabling learners to design, optimize, and tune databases for improved performance and reliability. By the end of the course, pre-service teachers will have developed the ability to design, implement, and manage relational databases, apply advanced SQL programming techniques, and integrate programming languages with databases to create robust applications for educational and professional purposes.
Course Title	Mobile App Development
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the knowledge and skills to design, develop, and deploy mobile applications for various platforms, such as Android and iOS. It introduces pre-service teachers to mobile development frameworks like Flutter, React Native, or Kotlin, focusing on creating cross-platform applications with responsive user interfaces and seamless functionality. Pre-service teachers explore topics such as mobile app architecture, user interface (UI) and user experience (UX) design, data storage, API integration, and performance optimization. The course emphasizes the importance of building mobile applications that are accessible, efficient, and tailored to user needs. Through hands-on activities, coding exercises, and collaborative projects, pre-service teachers develop functional mobile applications that address real-world challenges. Assignments include designing wireframes, building prototypes, and deploying applications to app stores. Assessments focus on the usability, functionality, and efficiency of their mobile solutions, ensuring alignment with industry standards. By the end of the course, pre-service teachers gain the technical expertise to create innovative mobile applications and the confidence to teach mobile development concepts effectively in educational and professional settings.
Course Title	Programming for Emerging Technologies
Course Credits	4 units

Contact Hours
Prerequisite/s
Description

102-108 hours

This course equips pre-service teachers with the knowledge and skills to explore, design, and implement innovative solutions using cutting-edge technologies such as the Internet of Things (IoT), Artificial Intelligence (AI), and Augmented/Virtual Reality (AR/VR). It introduces pre-service teachers to the principles, tools, and frameworks needed to develop applications for these emerging fields, emphasizing their transformative potential in education and various industries. Pre-service teachers engage with topics such as machine learning algorithms, sensor integration, AR/VR interface design, and cloud computing, focusing on their practical applications and societal impact. The course highlights the importance of staying updated with technological advancements and encourages critical thinking about their ethical and sustainable use. Through hands-on projects, simulations, and collaborative activities, pre-service teachers develop functional prototypes and innovative solutions to real-world problems. Assignments include designing IoT systems, creating AI-driven applications, and developing immersive AR/VR experiences. Assessments evaluate creativity, technical implementation, and problem-solving skills. By the end of the course, pre-service teachers are equipped to apply programming concepts to emerging technologies and inspire learners to explore these fields in their future careers.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Cybersecurity and Secure Coding Practices
4 units
102-108 hours

This course equips pre-service teachers with the knowledge and skills to develop secure software applications and implement cybersecurity principles to protect systems, data, and users. It introduces pre-service teachers to essential topics such as secure coding techniques, encryption, authentication, vulnerability assessment, and threat mitigation. Pre-service teachers explore common security risks, including malware, phishing, and injection attacks, and learn how to design applications that adhere to industry security standards and best practices. The course emphasizes the importance of cybersecurity in safeguarding digital systems and its relevance in modern software development. Through hands-on activities, coding exercises, and case studies, pre-service teachers practice identifying vulnerabilities, applying secure coding methods, and implementing security measures in web and mobile applications. Assignments include analyzing security scenarios, creating secure software solutions, and conducting penetration testing.

simulations. Assessments focus on the effectiveness of their security measures and adherence to secure coding principles. By the end of the course, pre-service teachers are equipped to apply cybersecurity practices in their teaching and professional work, fostering a culture of digital safety and responsibility.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Software Testing and Quality Assurance

4 units
102-108 hours

This course equips pre-service teachers with the knowledge and skills to ensure the functionality, reliability, and quality of software applications through systematic testing and quality assurance practices. It introduces pre-service teachers to essential concepts such as testing methodologies, debugging techniques, test automation, and performance evaluation. Pre-service teachers explore topics including unit testing, integration testing, system testing, and acceptance testing, emphasizing their importance in identifying and resolving software defects. The course highlights the role of quality assurance in maintaining high standards of software development and its application in real-world projects. Through hands-on activities, pre-service teachers practice designing test cases, executing testing procedures, and analyzing test results to improve software performance. Assignments include creating testing plans, applying automated testing tools, and conducting peer reviews of software projects. Assessments focus on the accuracy, thoroughness, and effectiveness of testing strategies. By the end of the course, pre-service teachers are equipped to apply software testing and quality assurance techniques in their teaching and professional practice, ensuring the delivery of reliable and high-quality software solutions.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Full-Stack Development

4 units
102-108 hours

This course equips pre-service teachers with the knowledge and skills to design, develop, and deploy complete web applications by integrating frontend and backend technologies. It introduces pre-service teachers to the full-stack development process, covering essential topics such as client-side and server-side programming, database integration, API development, and deployment strategies. Pre-service teachers explore frontend technologies like HTML, CSS, and JavaScript, alongside backend frameworks such as Node.js, Django, or Ruby on Rails, and learn how to manage databases using SQL or NoSQL systems. The course emphasizes the importance of creating scalable, efficient, and user-friendly

applications that meet industry standards. Through hands-on coding exercises, collaborative projects, and real-world simulations, pre-service teachers gain practical experience in building and deploying end-to-end applications. Assignments include developing full-stack projects, integrating APIs, and optimizing application performance. Assessments focus on the functionality, scalability, and security of their solutions. By the end of the course, pre-service teachers are equipped with the technical expertise to build professional-grade web applications and the confidence to teach full-stack development concepts effectively in educational and professional settings.

Course Title	Ethics and Sustainability in Software Development
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the knowledge and understanding to critically evaluate the ethical, social, and environmental implications of software development. It introduces pre-service teachers to key concepts such as ethical decision-making, digital responsibility, sustainable software practices, and the societal impact of technology. Pre-service teachers explore topics including data privacy, intellectual property, inclusivity in technology, and the environmental footprint of software systems. The course emphasizes the importance of integrating ethical principles and sustainability into the software development lifecycle to create technology that benefits society responsibly. Through case studies, reflective discussions, and collaborative projects, pre-service teachers analyze real-world scenarios and develop strategies to address ethical challenges in software development. Assignments include creating ethical guidelines for software projects, evaluating the sustainability of existing technologies, and proposing solutions to minimize environmental impact. Assessments focus on critical thinking, ethical reasoning, and the application of sustainable practices. By the end of the course, pre-service teachers are prepared to foster a culture of ethical awareness and sustainability in their teaching and professional work, contributing to the development of responsible and impactful technological solutions.

D.3.4 Computer Systems and Telecom Servicing

Course Title	Fundamentals of Computer Systems and Ha
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with foundational knowledge and technical skills to understand, assemble, install, configure, and maintain computer systems and hardware components essential for modern ICT infrastructures. It introduces key concepts such as computer architecture, hardware components, and system operations, focusing on the interaction and functionality of processors, memory, storage devices, and input/output peripherals. Pre-service teachers develop practical skills in assembling hardware, installing and configuring operating systems, performing basic diagnostics, and

implementing preventive maintenance to ensure optimal system performance. The course emphasizes safety standards, hardware compatibility, and the importance of understanding computer systems as a foundation for more advanced ICT concepts. Through hands-on activities, laboratory exercises, and problem-based assignments, pre-service teachers gain experience in setting up and maintaining computer systems. By the end of the course, pre-service teachers are prepared to perform basic installation, configuration, and maintenance of computer systems in various educational and professional environments.

Course Title

Course Credits

Contact Hours

Prerequisite/s

Description

Troubleshooting and Maintenance of Computer Systems

4 units

102-108 hours

This course equips pre-service teachers with the advanced knowledge and skills to systematically diagnose, troubleshoot, and maintain computer systems and peripherals to ensure optimal performance and reliability. It focuses on systematic approaches to identifying and resolving complex hardware and software issues, covering advanced topics such as diagnostic tools, error analysis, repair techniques, and maintenance strategies. Pre-service teachers explore methods for minimizing system downtime, optimizing performance, and adhering to safety standards in handling computer systems. The course emphasizes practical problem-solving skills and technical expertise in addressing real-world ICT challenges, enabling pre-service teachers to handle more complex and diverse system malfunctions. Through hands-on activities, simulations, and project-based learning, pre-service teachers gain advanced experience in troubleshooting, repairing, and managing computer systems. By the end of the course, pre-service teachers are fully equipped to independently manage, maintain, and troubleshoot computer systems in a variety of professional and educational settings.

Course Title

Course Credits

Contact Hours

Prerequisite/s

Description

Network Design and Configuration

4 units

102-108 hours

This course equips pre-service teachers with the knowledge and skills to design, implement, and manage efficient and secure computer networks that meet organizational and educational needs. It introduces fundamental networking concepts such as network topologies, protocols, IP addressing, subnetting, routing, and switching, emphasizing the principles of scalability, reliability, and security in network infrastructure. Pre-service teachers gain

hands-on experience in configuring network devices, managing network traffic, and troubleshooting connectivity issues to ensure optimal performance. The course highlights the importance of designing networks that support modern communication and data transfer requirements while adhering to industry standards. Through practical activities, simulations, and collaborative projects, pre-service teachers apply theoretical concepts to real-world scenarios, developing critical thinking and problem-solving abilities. Assessments include performance-based evaluations, project outputs, and reflective tasks that measure technical proficiency and design capabilities. By the end of the course, pre-service teachers are prepared to design, implement, and maintain robust network systems for diverse applications in educational and professional settings.

Course Title

Course Credits

Contact Hours

Prerequisite/s

Description

Telecommunications Systems and Broadband Technology

4 units

102-108 hours

This course equips pre-service teachers with the knowledge and skills to understand, design, and maintain telecommunications systems and broadband technologies that support global communication. It covers key concepts such as signal transmission, modulation techniques, network protocols, and broadband technologies including DSL, fiber optics, satellite, and cable systems. Pre-service teachers explore the principles of telecommunication infrastructure design, focusing on reliability, scalability, and quality of service. The course emphasizes the role of broadband technology in enabling high-speed data transmission and its impact on modern communication systems. Through hands-on activities, simulations, and case-based learning, pre-service teachers gain practical experience in configuring and troubleshooting telecommunications systems to meet the demands of various applications. Assessments include project-based outputs, practical tasks, and reflective exercises to evaluate their technical competence and problem-solving abilities. By the end of the course, pre-service teachers are equipped to implement and maintain telecommunications and broadband solutions in diverse educational and professional environments.

Course Title

Course Credits

Contact Hours

Prerequisite/s

Description

Wireless Communication and IoT Systems

4 units

102-108 hours

This course equips pre-service teachers with the knowledge and skills to design, implement, and maintain wireless communication systems and Internet of Things (IoT) networks that

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

support smart technologies and modern connectivity. It introduces wireless communication principles, including radio frequency, signal propagation, and wireless standards such as Wi-Fi, Bluetooth, Zigbee, and cellular networks like 4G and 5G. Pre-service teachers explore IoT architecture, device integration, and applications in various fields, emphasizing security, scalability, and energy efficiency. The course highlights the importance of wireless technologies in enabling IoT systems and fostering innovation in education, business, and industry. Through hands-on activities, simulations, and project-based learning, pre-service teachers gain practical experience in configuring wireless networks, deploying IoT devices, and troubleshooting connectivity issues. Assessments include performance-based tasks, collaborative projects, and reflective exercises to evaluate their technical expertise and problem-solving abilities. By the end of the course, pre-service teachers are prepared to design and manage wireless communication and IoT systems in diverse educational and professional contexts.

Server Administration and Virtualization

4 units
102-108 hours

This course equips pre-service teachers with advanced knowledge and technical expertise to design, manage, and maintain server systems and virtualized environments, preparing them for specialized roles in modern ICT infrastructures. It focuses on advanced server administration, including server architecture, installation, configuration, resource allocation, and the implementation of virtualization technologies such as virtual machines, hypervisors, and containerization. Pre-service teachers develop skills in advanced practices like security protocols, performance monitoring, troubleshooting, and pre-deployment procedures to ensure system reliability, scalability, and security. The course emphasizes the role of server optimization, fault tolerance, and resource management in meeting the complex demands of educational and professional ICT systems. Through hands-on activities, simulations, and project-based learning, pre-service teachers gain practical experience in deploying and managing secure, high-performing server environments and virtualized systems. They engage in tasks such as configuring servers, implementing virtualization solutions, and addressing real-world challenges through troubleshooting and optimization. Assessments include practical demonstrations, project outputs, and reflective exercises to evaluate technical proficiency, critical thinking, and problem-solving abilities. By the end of the course, pre-service teachers are equipped with the advanced skills and

knowledge necessary to create and maintain innovative, secure, and efficient ICT infrastructures in diverse contexts.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Cybersecurity Essentials for Networks

4 units
102-108 hours

This course equips pre-service teachers with the knowledge and skills to secure computer networks and protect systems from cyber threats in modern ICT environments. It introduces key concepts such as threat identification, risk assessment, encryption, firewalls, intrusion detection and prevention systems, and cybersecurity protocols. Pre-service teachers explore methods for analyzing vulnerabilities, implementing security measures, and responding to incidents to ensure the confidentiality, integrity, and availability of data. The course emphasizes the importance of ethical practices, data privacy, and compliance with international cybersecurity standards in safeguarding digital infrastructures. Through hands-on activities, simulations, and case-based learning, pre-service teachers gain practical experience in securing networks and mitigating risks. Assessments include performance-based tasks, security audits, and reflective exercises to evaluate technical proficiency and critical thinking skills. By the end of the course, pre-service teachers are prepared to apply cybersecurity principles and strategies to protect ICT systems in diverse educational and professional settings.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Cloud Computing and Data Center Manager

4 units
102-108 hours

This course equips pre-service teachers with the knowledge and skills to design, deploy, and manage cloud computing solutions and data center infrastructures essential for modern ICT systems. It introduces key concepts such as cloud service models (IaaS, PaaS, SaaS), virtualization, data storage, backup and disaster recovery, and energy-efficient data center operations. Pre-service teachers explore the integration of cloud technologies to optimize IT resources, enhance scalability, and support cost-effective solutions for organizations. The course emphasizes the importance of ensuring data security, system reliability, and sustainable practices in managing cloud-based services and physical data centers. Through hands-on activities, simulations, and project-based learning, pre-service teachers gain practical experience in configuring cloud environments, managing virtualized servers, and maintaining secure and efficient data center operations. Assessments include practical demonstrations, configuration tasks,

collaborative projects, and reflective exercises to evaluate technical proficiency and problem-solving skills. By the end of the course, pre-service teachers are prepared to implement and manage cloud computing and data center solutions in various educational and professional settings, contributing to the advancement of ICT infrastructure and digital transformation.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Telecom Infrastructure Design and Implement
 4 units
 102-108 hours

This course equips pre-service teachers with the knowledge and skills to design, implement, and manage telecommunications infrastructure that supports reliable and efficient communication systems. It introduces key concepts such as network planning, signal transmission, wired and wireless communication technologies, equipment configuration, and system optimization. Pre-service teachers explore the principles of designing scalable and sustainable telecom infrastructure while adhering to industry standards and addressing the needs of modern ICT environments. The course emphasizes the importance of robust and efficient telecom systems in enabling seamless connectivity and supporting diverse applications in education, business, and industry. Through hands-on activities, simulations, and project-based learning, pre-service teachers gain practical experience in deploying telecom networks, configuring communication devices, troubleshooting system issues, and ensuring optimal performance. Assessments include practical tasks, design projects, and reflective exercises to evaluate their technical expertise and problem-solving abilities. By the end of the course, pre-service teachers are equipped to develop and maintain telecommunications infrastructure for various professional and educational settings, contributing to the advancement of global communication technologies.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Ethics and Sustainability in Telecom and Systems Servicing
 4 units
 102-108 hours

This course equips pre-service teachers with the knowledge and skills to apply ethical principles and sustainable practices in telecommunications and systems servicing. It introduces key concepts such as professional ethics, environmental sustainability, responsible resource management, and the social impact of technology. Pre-service teachers explore the importance of adhering to ethical standards, promoting digital equity, and implementing eco-friendly solutions in

designing, maintaining, and servicing telecom and ICT systems. The course emphasizes the role of sustainability in reducing environmental impact, optimizing energy consumption, and supporting long-term technological development. Through case studies, discussions, and project-based learning, pre-service teachers analyze real-world scenarios to identify ethical dilemmas and develop sustainable strategies. Assessments include reflective exercises, case analyses, and collaborative projects to evaluate their ability to integrate ethical and sustainable practices into ICT environments. By the end of the course, pre-service teachers are prepared to uphold ethical standards and champion sustainability in telecommunications and systems servicing across diverse educational and professional contexts.

D.3.5 Digital Media Production and Content Creation

Course Title	Fundamentals of Digital Media Production
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with foundational knowledge and skills in digital media production, emphasizing the principles, tools, and techniques essential for creating high-quality multimedia content. It introduces pre-service teachers to the fundamentals of media production, including the basics of audio, video, image, and graphic design. Pre-service teachers explore the importance of design principles, file management, and the use of industry-standard software and hardware for media creation. The course highlights the relevance of digital media in education and professional fields, focusing on how to design engaging and effective content for diverse audiences. Through hands-on activities, collaborative projects, and guided practice, pre-service teachers develop essential technical skills such as video editing, image manipulation, and audio integration. Assignments include creating simple multimedia projects, applying design principles, and demonstrating proficiency in using digital tools. Assessments include project-based outputs, peer evaluations, and reflective exercises to ensure mastery of concepts and techniques. By the end of the course, pre-service teachers will have developed a foundational digital media portfolio showcasing their ability to create meaningful and visually appealing digital content.
Course Title	Photography and Image Editing
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with essential skills in photography and image

editing, focusing on the creative and technical aspects of visual storytelling. It introduces pre-service teachers to the fundamentals of camera operation, including exposure, composition, lighting, and framing techniques, enabling them to capture high-quality images. Pre-service teachers explore the principles of visual design and the importance of creating impactful and meaningful imagery for educational and professional contexts. The course emphasizes the use of industry-standard image editing software, such as Adobe Photoshop and Lightroom to enhance and manipulate photographs effectively. Through hands-on activities, pre-service teachers practice capturing images, editing photos, and applying techniques such as color correction, retouching, and image optimization. Assignments include creating a photography portfolio, editing projects, and reflecting on the use of visual media in education. Assessments include project outputs, peer reviews, and practical demonstrations to ensure mastery of photography and editing skills. By the end of the course, pre-service teachers will have developed a professional portfolio of edited images that showcase their ability to produce visually appealing and impactful content for diverse audiences.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Storytelling and Scriptwriting for Media

4 units
 102-108 hours

This course equips pre-service teachers with the skills to craft compelling stories and scripts tailored for various media platforms, emphasizing the importance of storytelling in communication and education. It introduces pre-service teachers to the elements of narrative structure, character development, dialogue writing, and pacing, enabling them to create engaging and meaningful content. The course explores the role of storytelling in shaping perspectives, fostering creativity, and enhancing audience engagement. Pre-service teachers learn to write scripts for diverse media formats, such as videos, podcasts, and digital platforms, while incorporating educational objectives and cultural relevance. Through hands-on activities, pre-service teachers practice brainstorming ideas, developing storyboards, and refining scripts in collaborative workshops. Assignments include creating original scripts, story outlines, and narrative-driven projects, with assessments based on creativity, clarity, and alignment with intended objectives. By the end of the course, pre-service teachers will have developed a portfolio of well-structured and impactful scripts that reflect their ability to communicate ideas effectively through storytelling across various media formats.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Audio Production and Podcasting

4 units
102-108 hours

This course equips pre-service teachers with essential skills and knowledge in audio production and podcasting, focusing on creating high-quality audio content for educational and professional purposes. It introduces pre-service teachers to the principles of sound design, audio recording, editing, and mixing, emphasizing the use of industry-standard tools and software. Pre-service teachers learn techniques for capturing clear audio, integrating sound effects, and incorporating music to enhance storytelling and engagement. The course explores the process of planning and scripting podcasts, highlighting the importance of audience analysis, content organization, and effective delivery. Through hands-on activities, pre-service teachers practice recording and editing audio, producing podcast episodes, and applying ethical standards in audio content creation. Assignments include creating a podcast series, developing scripts, and experimenting with soundscapes. Assessments involve project-based outputs, peer reviews, and reflective evaluations to ensure skill development and creativity in audio production. By the end of the course, pre-service teachers will have produced a podcast portfolio showcasing their ability to create engaging and professional audio content for diverse audiences.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Video Production and Editing Techniques

4 units
102-108 hours

This course equips pre-service teachers with knowledge, skills, and tools to create high-quality video content tailored for educational, instructional, and multimedia purposes. It focuses on the entire video production process, including pre-production planning, effective filming techniques, audio recording, and advanced post-production editing using industry-standard software. Pre-service teachers explore the principles of visual storytelling, cinematography, sound design, and the integration of special effects to develop engaging and impactful videos. Emphasis is placed on mastering editing techniques such as transitions, color grading, sound mixing, and visual effects, along with managing post-production tasks like rendering, exporting, and finalizing projects. The course highlights the importance of creating inclusive and accessible videos that address the diverse needs of learners and audiences in various educational contexts. Through hands-on activities, collaborative projects, and practical assignments, pre-service teachers gain experience in

filming, editing, and producing professional video outputs. Assignments include creating instructional videos, educational short films, and multimedia presentations, with assessments focusing on project quality, peer feedback, and reflective learning. By the end of the course, pre-service teachers will have developed a professional portfolio of polished video projects, showcasing their ability to effectively communicate ideas and enhance learning through multimedia content creation.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Social Media Content Creation and Managen

4 units
 102-108 hours

This course equips pre-service teachers with the skills to design, curate, and manage content for social media platforms, emphasizing strategies for effective communication and audience engagement. It introduces pre-service teachers to the principles of social media marketing, content planning, and analytics, enabling them to create impactful and relevant multimedia posts that align with educational and professional goals. The course explores platform-specific best practices for channels such as Facebook, Instagram, YouTube, and TikTok, highlighting the importance of visual design, persuasive writing, and consistency in branding. Pre-service teachers learn to develop creative campaigns, produce engaging multimedia content, and analyze performance metrics to refine their strategies. Through hands-on activities, pre-service teachers practice creating and scheduling posts, designing graphics, and managing social media accounts. Assignments include developing a comprehensive social media campaign, producing platform-specific content, and analyzing audience engagement. Assessments focus on project outputs, peer reviews, and reflective exercises to ensure mastery of content creation and management techniques. By the end of the course, pre-service teachers will have created a professional social media portfolio showcasing their ability to produce and manage dynamic, culturally relevant, and ethically sound content for diverse audiences.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Live Streaming and Event Production

4 units
 102-108 hours

This course equips pre-service teachers with the knowledge and skills to plan, produce, and manage live streaming events for educational and professional purposes. It introduces pre-service teachers to the technical aspects of live streaming, including equipment setup, software configuration, and troubleshooting, ensuring the delivery of high-quality real-time content. Pre-service teachers learn strategies

for engaging virtual audiences through multimedia integration, interactive features, and effective event planning. The course emphasizes the importance of accessibility, inclusivity, and ethical practices in live streaming and event production. Through hands-on activities, pre-service teachers practice setting up live streams, managing digital events, and incorporating elements such as graphics, animations, and audience interaction tools. Assignments include designing and executing live streaming events, preparing event plans, and reflecting on audience engagement strategies. Assessments focus on project outputs, peer evaluations, and technical demonstrations to ensure proficiency in live production techniques. By the end of the course, pre-service teachers will have successfully produced a live streaming event, showcasing their ability to create dynamic and impactful real-time content for diverse audiences.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Media Production for AR/VR Platforms

4 units
 102-108 hours

This course equips pre-service teachers with the skills to design and produce immersive content for augmented reality (AR) and virtual reality (VR) platforms, focusing on the integration of emerging technologies in education and multimedia production. It introduces pre-service teachers to the principles of AR/VR technology, user experience design, and 3D content creation, emphasizing the use of industry-standard tools and software for developing interactive and engaging experiences. Pre-service teachers explore the applications of AR/VR in enhancing learning, storytelling, and audience engagement, while addressing the technical and creative challenges of immersive media production. Through hands-on activities, pre-service teachers practice designing AR/VR environments, creating 3D assets, and developing interactive elements that align with educational objectives. Assignments include producing AR/VR projects, designing immersive experiences, and reflecting on the potential of these technologies in various contexts. Assessments focus on project-based outputs, peer reviews, and demonstrations of technical proficiency. By the end of the course, pre-service teachers will have developed an AR/VR portfolio showcasing their ability to create innovative and impactful immersive media content for diverse audiences and platforms.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Multimedia Project Management and Collaboration

4 units
 102-108 hours

This course equips pre-service teachers with

the skills to effectively manage multimedia projects and collaborate in team-based production environments, emphasizing organizational strategies and teamwork for successful project execution. It introduces pre-service teachers to the principles of project planning, workflow management, and communication techniques, ensuring the delivery of high-quality multimedia outputs within deadlines. Pre-service teachers learn to define project objectives, allocate resources, establish timelines, and navigate challenges in collaborative settings. The course highlights the importance of leadership, problem-solving, and adaptability in managing multimedia projects, with a focus on fostering a cooperative and productive team dynamic. Through hands-on activities, pre-service teachers engage in team-based projects, develop project plans, and utilize tools such as project management software and collaborative platforms. Assignments include creating detailed project proposals, managing production schedules, and evaluating team performance. Assessments focus on project deliverables, peer evaluations, and reflective exercises to ensure mastery of effective project management and collaboration techniques. By the end of the course, pre-service teachers will have developed the ability to manage multimedia projects efficiently and collaboratively, preparing them to lead and contribute to diverse production teams in educational and professional contexts.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Ethics and Copyright in Digital Media Production
 4 units
 102-108 hours

This course equips pre-service teachers with a comprehensive understanding of ethical principles and copyright laws in digital media production, emphasizing the importance of responsible and legal content creation. It introduces pre-service teachers to key concepts such as intellectual property rights, fair use, plagiarism, and licensing, ensuring they understand how to navigate the legal and ethical challenges of producing and sharing digital content. The course explores case studies and real-world scenarios to highlight the implications of copyright infringement and unethical practices, fostering critical thinking and ethical decision-making. Pre-service teachers learn to apply best practices for sourcing, attributing, and using media content, as well as strategies for protecting their own creative works. Through interactive discussions, workshops, and scenario-based activities, pre-service teachers analyze ethical dilemmas and develop practical solutions. Assignments include creating media projects with proper attribution, evaluating copyright compliance, and reflecting on ethical considerations in media production.

Assessments focus on written reflections, project outputs, and peer reviews to ensure a thorough understanding of ethical and legal standards. By the end of the course, pre-service teachers will be equipped to create and share digital media responsibly, adhering to ethical guidelines and copyright laws in their professional practice.

D.3.6 Contact Center Services

Course Title	Fundamentals of Contact Center Operations
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with foundational knowledge and practical skills in contact center operations, introducing them to the structure, roles, and processes of the contact center industry. It focuses on key concepts such as organizational workflows, service delivery models, and performance metrics, including call handling time, first-contact resolution, and customer satisfaction, to highlight the importance of operational efficiency and customer-focused service. Pre-service teachers explore the use of omnichannel technologies, such as phone, chat, and social media platforms, to meet diverse customer needs and ensure service consistency. They also examine the role of data-driven quality assurance practices in addressing the evolving expectations of customers. Through simulations, case studies, and collaborative projects, pre-service teachers gain hands-on experience in inquiry handling, call routing, escalation protocols, and service recovery strategies. These activities are designed to develop professional communication, problem-solving, and decision-making skills. By the end of the course, pre-service teachers apply industry-aligned practices by designing learner-centered instructional activities, developing training modules, and evaluating contact center processes. This introductory course under a specialized concentration prepares pre-service teachers to foster technical mastery, professionalism, and effective service delivery in entry-level contact center roles.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Customer Service Communication Skills
4 units
102-108 hours

This course equips pre-service teachers with the knowledge and skills to teach effective communication techniques essential for success in customer service roles. It emphasizes the importance of active listening, empathy, verbal and non-verbal communication, and cultural sensitivity in managing customer interactions across diverse contexts. Pre-service teachers explore strategies for handling challenging conversations, resolving customer concerns, and adapting communication styles to various channels such as voice, chat, and email. Through role-playing exercises, simulations, and reflective activities, they practice teaching communication methods that enhance customer satisfaction and professionalism. Assignments include designing instructional materials, creating communication training modules, and assessing learners' ability to

apply communication strategies in real-world scenarios. Pre-service teachers use industry-standard resources and tools to demonstrate how effective communication builds trust and fosters positive customer relationships. Assessments are designed to evaluate their ability to prepare learners for communication excellence in customer service environments.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Ethics and Professionalism in Customer Ser
 4 units
 102-108 hours

This course equips pre-service teachers with the knowledge and skills to teach the importance of ethics and professionalism in customer service. It focuses on fostering integrity, accountability, empathy, and respect as essential qualities for building trust and maintaining positive customer relationships. Pre-service teachers explore ethical decision-making frameworks, cultural sensitivity, and strategies for managing challenging situations with professionalism and fairness. The course emphasizes the significance of adhering to ethical standards and professional conduct in all customer interactions to enhance service quality and organizational reputation. Through role-playing activities, case studies, and reflective discussions, pre-service teachers practice developing instructional strategies that instill these values in learners. Assignments include creating lesson plans, developing ethical decision-making scenarios, and designing assessments to evaluate learners' understanding and application of ethical principles. Assessments are designed to measure pre-service teachers' ability to prepare learners for real-world customer service roles, ensuring they demonstrate professionalism and uphold ethical practices in diverse and dynamic work environments.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Business Process Outsourcing (BPO) Indust
Standards
 4 units
 102-108 hours

This course equips pre-service teachers with a comprehensive understanding of the global Business Process Outsourcing (BPO) industry and its established standards, trends, and best practices. It focuses on the operational frameworks, compliance requirements, and quality management systems that ensure efficient and effective service delivery, including ISO standards and other industry benchmarks. Pre-service teachers explore the economic significance of the BPO industry, the dynamics of outsourcing, and the role of cultural and linguistic diversity in global operations. Through case studies, industry immersion, and collaborative projects,

pre-service teachers analyze real-world scenarios to identify the skills, competencies, and ethical practices necessary for success in the BPO sector. Assignments include developing lesson plans, instructional materials, and training modules that reflect international BPO standards. Activities such as group discussions, role-playing, and scenario-based problem-solving are utilized to enhance understanding and application of industry principles. Assessments are designed to evaluate pre-service teachers' ability to prepare learners for careers in the BPO industry by aligning teaching strategies with recognized global standards.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Contact Center Technologies and Tools

4 units
 102-108 hours

This course equips pre-service teachers with the knowledge and skills to teach the use of essential technologies and tools in contact center operations. It focuses on Customer Relationship Management (CRM) systems, omnichannel platforms, telecommunication software, and customer interaction analytics tools, emphasizing their role in enhancing service delivery and operational efficiency. Pre-service teachers explore emerging technologies such as cloud-based systems, chatbots, and AI-powered tools to understand their impact on modern contact centers. Through hands-on activities, simulations, and demonstrations, they practice teaching the application of these tools in real-world scenarios. Assignments include developing instructional materials, creating training modules, and designing technology-focused lesson plans that align with industry needs. Activities such as group projects, tool explorations, and case studies allow pre-service teachers to gain practical experience in using and teaching these technologies. Assessments focus on their ability to prepare learners to effectively utilize contact center technologies to meet customer needs and improve overall performance.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Managing Multichannel Customer Interaction

4 units
 102-108 hours

This course equips pre-service teachers with the knowledge and skills to teach effective strategies for managing customer interactions across multiple communication channels, including voice, email, chat, and social media. It emphasizes the importance of delivering consistent, seamless, and personalized customer experiences while addressing the unique challenges of multichannel communication. Pre-service teachers explore techniques for managing high volumes of interactions, maintaining service quality, and

resolving customer concerns efficiently. Through role-playing exercises, simulations, and collaborative projects, they practice teaching strategies to help learners adapt to the demands of multichannel environments. Assignments include designing training modules, creating case-based scenarios, and developing tools for assessing learners' ability to manage multichannel interactions. Pre-service teachers also analyze real-world examples to identify best practices and innovative approaches in multichannel customer service. Assessments are designed to evaluate their ability to prepare learners to successfully handle diverse communication platforms and deliver exceptional customer service in fast-paced, technology-driven environments.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Troubleshooting and Problem Resolution Sk
 4 units
 102-108 hours

This course equips pre-service teachers with the knowledge and techniques to teach effective troubleshooting and problem resolution strategies essential for customer service success. It focuses on identifying, analyzing, and resolving customer issues while maintaining professionalism and customer satisfaction. Pre-service teachers explore critical thinking methods, root cause analysis, and decision-making frameworks to address complex customer concerns. The course emphasizes the importance of clear communication, patience, and empathy in resolving disputes and building customer trust. Through role-playing scenarios, case studies, and collaborative problem-solving exercises, pre-service teachers practice designing instructional activities that develop learners' ability to handle challenging customer interactions. Assignments include creating lesson plans, developing troubleshooting guides, and designing assessments to evaluate learners' problem-solving skills. Pre-service teachers also analyze real-world examples to identify best practices in resolving customer issues effectively. Assessments are designed to measure their ability to prepare learners for high-pressure situations, ensuring they can manage and resolve problems efficiently in professional contact center environments.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Data Analytics for Customer Experience Management
 4 units
 102-108 hours

This course equips pre-service teachers with the knowledge and skills to teach data-driven approaches for improving customer experience in contact center operations. It focuses on the fundamentals of data

collection, analysis, and visualization, emphasizing the importance of using customer feedback, performance metrics, and predictive analytics to enhance service delivery and customer satisfaction. Pre-service teachers explore how to interpret data trends, measure key performance indicators (KPIs), and apply insights to optimize customer interactions and operational efficiency. Through hands-on activities, case studies, and data analysis exercises, pre-service teachers develop their ability to teach learners how to leverage data for decision-making and problem-solving. Assignments include designing lesson plans, creating data-driven training modules, and analyzing customer experience case studies to identify opportunities for improvement. Pre-service teachers utilize industry-standard tools and resources to integrate data analytics into their teaching practices. Assessments are designed to evaluate their proficiency in preparing learners to use analytics for driving customer satisfaction, improving service quality, and achieving business goals in contact center environments.

Course Title

Course Credits

Contact Hours

Prerequisite/s

Description

Workforce Management and Quality Assurance in Contact Centers

4 units

102-108 hours

This course equips pre-service teachers with the knowledge and skills to teach effective workforce management and quality assurance practices in contact center operations. It focuses on the principles of workforce planning, scheduling, and performance monitoring to ensure operational efficiency and service quality. Pre-service teachers explore strategies for managing employee performance, optimizing staffing levels, and implementing quality assurance frameworks to evaluate and enhance customer interactions. The course emphasizes the importance of aligning workforce management and quality assurance practices with industry standards and customer expectations. Through case studies, simulations, and collaborative projects, pre-service teachers learn how to create training modules and instructional materials that emphasize operational excellence. Assignments include designing lesson plans, developing performance monitoring tools, and creating assessments to measure learners' understanding of workforce management and quality assurance concepts. Assessments are designed to evaluate pre-service teachers' ability to prepare learners for roles that involve managing teams, ensuring quality service delivery, and maintaining compliance with industry benchmarks in contact center environments.

Course Title

AI and Automation in Contact Center Service

Course Credits
Contact Hours
Prerequisite/s
Description

4 units
 102-108 hours

This course equips pre-service teachers with the knowledge and skills to teach the integration of artificial intelligence (AI) and automation in modern contact center services. It focuses on the role of AI-powered tools such as chatbots, virtual assistants, speech analytics, and predictive analytics in enhancing customer service efficiency, personalization, and scalability. Pre-service teachers explore how automation transforms customer interactions, streamlines workflows, and improves operational performance while addressing the evolving needs of the industry. The course emphasizes the importance of understanding the ethical implications and workforce adjustments brought about by AI and automation. Through hands-on activities, case studies, and technology demonstrations, pre-service teachers practice designing instructional strategies to prepare learners for adopting and utilizing AI-driven tools in contact center environments. Assignments include developing lesson plans, creating training modules on AI applications, and analyzing case studies of successful automation implementations. Assessments are designed to evaluate pre-service teachers' ability to prepare learners for the challenges and opportunities presented by AI and automation, ensuring they are ready to thrive in technology-driven customer service roles.

D.4 Major in Agri-Fishery Arts

D.4.1 Agricultural Production and Technology

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Animal Production (Poultry and Swine)

4 units
 102-108 hours

This course equips pre-service teachers with the competencies in raising, managing, and marketing poultry and swine using sustainable and ethical production practices. It covers animal care, housing, feeding, breeding, health management, and waste disposal with emphasis on productivity, biosecurity, and environmental stewardship. The course includes occupational health and safety, use of farm tools and equipment, estimation, and record keeping. This also deals with maintaining housing facilities, formulating feeds, implementing breeding and farrowing procedures, preventing diseases, and marketing livestock products. Learning is delivered through lectures, demonstrations, and hands-on farm activities.

Course Title	Animal Production (Large and Small Ruminants)
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	

Description	This course equips pre-service teachers with the competencies in raising and managing large and small ruminants—such as cattle, goats, sheep, and buffalo—for meat, milk, and breeding purposes. It covers animal care, housing maintenance, forage provision, breeding techniques, and health management while emphasizing sustainability, productivity, and safety in livestock operations. The course also includes occupational health and safety, proper use of farm tools and equipment, estimation, and record keeping. Learning is delivered through lectures, farm demonstrations, and supervised hands-on activities.
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Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Horticultural Crop Production

4 units
102-108 hours

This course equips pre-service teachers with the competencies to cultivate and manage horticultural crops, including fruits, vegetables, ornamentals, and plantation crops, through sustainable and science-based practices. It emphasizes crop propagation, cultural management, pest and disease control, harvesting, and postharvest handling to ensure quality and productivity. The course also develops skills in the operation and maintenance of tools, equipment, and facilities used in horticultural production. Learning is delivered through lectures, laboratory work, and field-based activities where pre-service teachers engage in tasks such as seedling propagation, pruning, fertilization, and pest management.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Postharvest Technology and Management

4 units
102-108 hours

This course equips pre-service teachers with the competencies to perform postharvest operations that maintain crop quality, minimize losses, and enhance market value. It develops practical skills in harvesting, handling, sorting, grading, packaging, storing, and transporting agricultural produce through safe, efficient, and sustainable methods. Upon completion, pre-service teachers are prepared for teaching postharvest technology and the National Certificate competency assessment. Instruction is delivered through lectures, field demonstrations, and hands-on training in farm and warehouse environments. Pre-service teachers participate in activities such as moisture testing, crop sorting, packaging design, and quality monitoring with emphasis on reducing spoilage, ensuring food safety, and promoting product competitiveness.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Agroentrepreneurship

4 units
102-108 hours

This course equips pre-service teachers with the competencies to establish and manage small-scale farm enterprises using market-driven and sustainable approaches.

Pre-service teachers will develop skills in assessing market opportunities, creating farm production plans, handling finances, and marketing agricultural products. Completion prepares pre-service teachers for teaching Agroentrepreneurship and National Certificate assessment. The course covers assessing market opportunities, establishing farm production plans, handling farm finances, and marketing produce effectively. Instruction is delivered through lectures, case studies, farm simulations, and hands-on enterprise development activities. Pre-service teachers engage in tasks such as market analysis, production planning, budgeting, and product promotion with emphasis on innovation, sustainability, and profitability. Assessment includes written exams, performance-based tasks, and project presentations.

Course Title

Course Credits

Contact Hours

Prerequisite/s

Description

Pressurized Irrigation System Installation and Maintenance

4 units

102-108 hours

This course equips pre-service teachers with the competencies to install, operate, and maintain water and irrigation systems for agricultural production, focusing on pressurized irrigation technologies that promote efficiency and sustainability. It develops skills in pump and pipeline installation, flow control, water distribution, and system maintenance in line with industry and environmental standards. Upon completion, pre-service teachers are prepared for teaching Pressurized Irrigation System and National Certificate competency assessment. Instruction combines lectures, technical demonstrations, and field-based practicum activities. Pre-service teachers engage in layout planning, equipment installation, troubleshooting, and performance evaluation with emphasis on accuracy, water conservation, and sustainable resource utilization. Assessment includes written tests, hands-on evaluations, and institutional competency-based examinations.

Course Title

Course Credits

Contact Hours

Prerequisite/s

Description

Applied Rice Mechanization and Engine Sys

4 units

102-108 hours

This course equips pre-service teachers with the competencies to operate, maintain, and troubleshoot rice machinery and engine systems used in various stages of rice production, including land preparation, crop establishment, care, harvesting, drying, and milling. It emphasizes safety, efficiency, and sustainability in mechanized rice farming. Instruction combines lectures, demonstrations, and hands-on field operations. Pre-service teachers perform machine setup, calibration, and maintenance activities with emphasis on

precision, safety, and productivity. Assessment includes written examinations, practical performance evaluations, and institutional competency tests.

Course Title	Climate Smart and Digital Farming System
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course introduces students to the principles and practices of climate-smart agriculture integrated with digital technologies for sustainable farming systems. It emphasizes adaptive strategies that address climate variability, resource efficiency, and ecological resilience while leveraging digital tools such as precision farming, data analytics, and smart sensors. Learners will explore topics including sustainable crop production, soil and water management, renewable energy applications, and ICT-enabled decision-making in agriculture. Practical activities, case studies, and community-based projects will provide opportunities to design innovative, inclusive, and technology-driven farming solutions responsive to local and global challenges. By the end of the course, students will be able to critically evaluate farming practices, apply digital innovations, and propose climate-smart strategies that enhance productivity, sustainability, and food security.

D.4.2 Aquatic Production and Processing Technology

Course Title	Aquaculture Operations
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the competencies to assist in aquaculture operations through the management of facilities, nurseries, and grow-out systems for fish, shrimp, and seaweeds. It develops practical skills in handling aquatic organisms, monitoring water quality, and maintaining the efficiency and sustainability of aquaculture systems. The course emphasizes responsible aquaculture practices, environmental stewardship, and the application of safety and sanitation protocols in production settings. Through lectures, farm-based training, and supervised fieldwork, pre-service teachers engage in activities such as preparing tanks and ponds, grading and feeding aquatic stock, and performing routine maintenance of aquaculture facilities and equipment.

Course Title	Fish Products Packaging
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the competencies to package processed fish and other aquatic products using appropriate

preservation and packaging methods such as vacuum sealing, poly bagging, bottling, and canning. It develops their skills in operating packaging tools and equipment, applying food safety and sanitation procedures, and implementing good manufacturing practices to ensure product quality and consumer safety. Instruction combines lectures, laboratory sessions, and supervised hands-on activities in food processing environments where pre-service teachers prepare packaging materials, operate sealing and labeling machines, and apply sanitation and quality control protocols. The course emphasizes accuracy, hygiene, and compliance with regulatory standards in packaging operations. By the end of the course, pre-service teachers demonstrate the ability to teach safe and efficient fish product packaging aligned with industry practices and pass the Fish Products Packaging National Certificate assessment.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Fish Processing and Preservation

4 units
 102-108 hours

This course equips pre-service teachers with the competencies to process and preserve fish and other aquatic products using traditional and modern preservation methods. It develops skills in salting, curing, smoking, drying, fermenting, and thermal processing while ensuring adherence to food safety regulations and good manufacturing practices. The course integrates knowledge of sanitation, equipment operation, and quality control essential for producing safe and marketable food products. Through lectures, laboratory sessions, and supervised hands-on activities, pre-service teachers perform tasks such as preparing raw materials, applying preservation techniques, operating processing tools, and packaging finished products with emphasis on hygiene, efficiency, and product quality. It also cultivates professional and entrepreneurial skills for engagement in seafood processing plants, small-scale enterprises, and community-based food ventures. By the end of the course, pre-service teachers demonstrate the ability to teach processing and preservation of aquatic products according to industry standards.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Hatchery Management

4 units
 102-108 hours

This course equips pre-service teachers with the competencies to perform hatchery operations for aquatic species such as fish, shrimp, and seaweeds. It develops technical skills in preparing and maintaining hatchery facilities, managing water quality, handling and conditioning broodstock, and conducting larval rearing and nursery operations. Emphasis is

placed on sustainability, biosecurity, and the application of scientific and technical knowledge in aquaculture systems. The course integrates both theoretical and practical components through lectures, laboratory sessions, and supervised field activities in aquaculture facilities. Pre-service teachers perform essential hatchery tasks including water parameter monitoring, feeding management, and stock maintenance to ensure optimal growth and survival rates. Instruction also strengthens workplace communication, teamwork, and occupational health and safety practices.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Aquatic Animal Health Management

4 units
 102-108 hours

This course equips pre-service teachers with the competencies to manage the health and biosecurity of aquatic animals in hatcheries, grow-out farms, and aquaculture facilities. It develops technical skills in handling aquatic species, administering treatments, monitoring water quality, and implementing disease prevention and control protocols. Emphasis is placed on biosecurity, environmental stewardship, and the responsible use of aquatic health care practices. Instruction integrates lectures, laboratory sessions, and hands-on training in aquaculture health management environments. Pre-service teachers perform essential tasks such as diagnosing aquatic diseases, applying therapeutics, maintaining health records, and enforcing sanitation and safety measures to promote sustainable production. The course also enhances competencies in communication, teamwork, occupational health and safety, and the proper handling and storage of veterinary supplies.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Fishery Equipment Repair and Maintenance

4 units
 102-108 hours

This course equips pre-service teachers with the competencies to lead and perform the repair and maintenance of fishing gear, particularly nets used in commercial and community-based fisheries. It develops technical and supervisory skills in net handling, damage evaluation, mending administration, and operational safety. Emphasis is placed on precision, efficiency, and leadership in maintaining functional and sustainable fishing operations. Instruction integrates lectures, technical demonstrations, and hands-on repair activities in fishery environments. Pre-service teachers perform tasks such as inspecting nets, planning and coordinating repair operations, and overseeing team performance to ensure quality workmanship and safety compliance. The

	course also strengthens workplace communication, teamwork, problem-solving, and occupational health and safety practices. Completion of the course prepares pre-service teachers for teaching Fishing Gear Repair.
Course Title	Postharvest Handling of Aquatic Resource Management
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the competencies to handle, sort, preserve, and store aquatic products after harvest to maintain quality, safety, and market value. It develops practical skills in applying food safety protocols, operating post-harvest tools and equipment, and implementing sustainable handling practices for fish, shrimp, mollusks, and seaweeds. Emphasis is placed on hygiene, efficiency, and environmental responsibility throughout the post-harvest process. Instruction combines lectures, laboratory sessions, and supervised field activities in aquaculture and seafood processing environments. The course also strengthens competencies in communication, teamwork, and occupational health and safety in aquatic resource management. Pre-service teachers perform tasks such as grading aquatic products, applying preservation methods like chilling, drying, and curing, and packaging for transport and market distribution.
Course Title	Aquatic Farm Business and Enterprise
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the competencies to establish and manage sustainable small-scale aquatic farm enterprises through market-oriented strategies. It develops skills in assessing market opportunities, planning aquaculture production, managing finances, and promoting aquatic products such as fish, shrimp, and seaweed. Instruction integrates lectures, case analyses, enterprise simulations, and supervised aquaculture business activities to strengthen decision-making and entrepreneurial competence. Pre-service teachers perform tasks such as market analysis, production scheduling, budgeting, and sales promotion with emphasis on innovation, sustainability, and profitability.
Course Title	Sustainable Aquatic Resource Management
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the competencies to manage aquatic resources sustainably using science-based, community-driven, and climate-resilient

approaches. It develops skills in ecosystem-based management, responsible aquaculture, post-harvest handling, and coastal resource protection. Instruction integrates lectures, laboratory sessions, fieldwork, and community immersion to strengthen environmental stewardship and adaptive management practices. Pre-service teachers engage in tasks such as water quality monitoring, habitat assessment, aquaculture planning, and participatory resource mapping with emphasis on sustainability, inclusivity, and resilience. The course also enhances understanding of aquatic ecology, coastal zone management, climate adaptation, and policy frameworks supporting responsible resource use.

D.4.3 Sustainable Food Systems Technology

Course Title	Sustainable Food Systems Policy and Governance
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the competencies to analyze, design, and implement policies and governance mechanisms that support sustainable, inclusive, and climate-resilient food systems. It examines the interconnected dimensions of food security and sovereignty, climate change adaptation in agriculture, institutional frameworks, and governance structures from local to global contexts. Pre-service teachers develop policy literacy and critical thinking skills through stakeholder analysis, participatory planning, and evaluation of governance models that promote equity and environmental sustainability. Instruction combines lectures, policy workshops, discussions, and community immersion to strengthen interdisciplinary collaboration and ethical leadership. Pre-service teachers engage in applied tasks such as drafting policy briefs, mapping food system actors, assessing governance mechanisms, and developing local food action plans. Assessment includes written examinations, policy critique papers, and project presentations aligned with institutional and community standards. Upon completion, pre-service teachers demonstrate readiness to teach food systems governance and to guide learners in promoting food security, sustainable agriculture, and responsible citizenship.
Course Title	Food Processing and Preservation
Course Credits	4 units
Contact Hours	102-108 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the competencies to process and preserve food products using traditional and modern methods that ensure safety, quality, extended

shelf life, and adherence to food safety and sanitation standards. It develops practical skills in applying preservation techniques such as drying and dehydration, fermentation and pickling, salting, curing and smoking, sugar concentration, and thermal processing while maintaining compliance with good manufacturing practices. The course emphasizes hygiene, efficiency, and sustainability in preparing raw materials, operating food-grade equipment, and packaging products for storage or market distribution. Instruction combines lectures, laboratory sessions, and hands-on food processing activities conducted in simulated production environments. Assessment includes written examinations, performance-based evaluations, and institutional competency checks. Upon completion, pre-service teachers demonstrate readiness to teach food processing and preservation modules, support school-based food enterprises, and guide learners in developing entrepreneurial and technical competencies for community livelihood and small-scale agribusiness ventures.

Course Title

Course Credits

Contact Hours

Prerequisite/s

Description

Agroentrepreneurship and Farm Business Management

4 units

102-108 hours

This course equips pre-service teachers with the competencies to establish and manage small-scale farm enterprises through sustainable, market-driven, and financially responsible approaches. Pre-service teachers develop the ability to assess market opportunities, design farm production plans, manage finances, and effectively market agricultural products. The course emphasizes innovation, sustainability, and profitability in managing farm enterprises and agribusiness ventures. Instruction is delivered through lectures, case analyses, enterprise simulations, and experiential learning activities that replicate real agribusiness operations. Pre-service teachers perform tasks such as conducting market analyses, preparing production and financial plans, and developing marketing strategies. Assessment includes written examinations, performance-based activities, and project presentations. Upon completion, pre-service teachers will demonstrate readiness to teach agroentrepreneurship concepts; lead school-based agribusiness projects; guide learners in developing entrepreneurial and managerial competencies for sustainable farm enterprise development and self-employment; mobilize farmers' participation in capacity-building activities; and build their own capacity.

Course Title

Aquaculture and Aquatic Resource Manager

Course Credits
Contact Hours
Prerequisite/s
Description

4 units
102-108 hours

This course equips pre-service teachers with the competencies to operate and manage aquaculture systems that ensure sustainable food production and environmental responsibility. It covers aquatic ecology, water quality management, fish culture systems, feeding and breeding operations, biosecurity, and post-harvest handling. Pre-service teachers gain practical experience in designing and maintaining aquaculture facilities, monitoring aquatic environments, and managing production cycles for fish, shrimp, and seaweed. Instruction integrates lectures, laboratory sessions, and fieldwork to bridge theory and practice. Pre-service teachers engage in activities such as water testing, pond preparation, stock monitoring, and harvesting with emphasis on safety, efficiency, and sustainability. Assessment includes written examinations, field reports, and performance-based evaluations. Upon completion, pre-service teachers demonstrate readiness to teach aquaculture operations, support school-based livelihood programs, and guide learners in developing employable skills for fish farming and sustainable aquaculture enterprises.

Course Title

Course Credits
Contact Hours
Prerequisite/s
Description

Postharvest Handling and Food Preservation Technology

4 units
102-108 hours

This course equips pre-service teachers with the competencies to handle, preserve, and extend the shelf life of agricultural and aquatic products through safe, efficient, and sustainable post-harvest and food preservation practices. Pre-service teachers develop technical skills in sorting and grading raw materials, applying preservation techniques such as drying, curing, fermentation, pickling, sugar concentration, and thermal processing, and operating food-grade equipment in food-safe environments. The course emphasizes hygiene, quality assurance, and sustainability to minimize post-harvest losses and strengthen food security. Instruction is delivered through lectures, laboratory sessions, and hands-on activities simulating real-world agribusiness and community-based food systems. Assessment includes written examinations, performance-based evaluations, and institutional competency checks aligned with national standards. Upon completion, pre-service teachers demonstrate readiness to teach food preservation modules and guide learners in developing employable skills for food processing, agribusiness ventures, and local food security initiatives.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Food Safety and Quality Assurance

4 units
102-108 hours

This course equips pre-service teachers with the competencies to implement food safety protocols and quality assurance systems in food production, processing, and packaging operations. It covers food hygiene and sanitation, Good Manufacturing Practices (GMP), Hazard Analysis and Critical Control Points (HACCP), food safety laws and regulations, and quality control systems. Pre-service teachers develop technical skills in hazard identification, sanitation planning, product inspection, documentation, traceability, and compliance with national and international food safety standards. The course also integrates contemporary practices such as digital traceability, food fraud prevention, and sustainability in food quality management. Instruction is delivered through lectures, laboratory simulations, case studies, and industry immersion. Pre-service teachers engage in practical tasks such as facility auditing, sanitation plan development, quality data analysis, and process improvement design with emphasis on accuracy, accountability, and regulatory compliance. Assessment includes written examinations, practical demonstrations, group projects, and institutional competency checks. Upon completion, pre-service teachers demonstrate readiness to teach food safety and quality assurance modules and guide learners in developing employable skills for quality management and control roles in food manufacturing and agribusiness enterprises.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Sustainable Packaging and Labeling

4 units
102-108 hours

This course equips pre-service teachers with the competencies to design, select, and implement sustainable packaging and labeling systems for food and agricultural products. It integrates foundational and applied competencies aligned with institutional and industry standards, emphasizing eco-efficient, food-safe, and market-responsive approaches. Topics include packaging design principles, biodegradable and recyclable materials, food-grade technologies, labeling laws and standards, traceability systems, and branding strategies. Pre-service teachers develop technical and creative skills in material selection, label design, and regulatory compliance while promoting product integrity and environmental stewardship. The course emphasizes sustainability, innovation, and circular economy practices through the application of smart and climate-conscious packaging solutions. Instruction is delivered through lectures, product design workshops,

case studies, and hands-on packaging and labeling activities. Pre-service teachers engage in tasks such as developing eco-friendly packaging prototypes, creating compliant labels, and assessing environmental impact and consumer appeal. Assessment includes written examinations, prototype evaluation, project presentations, and performance-based tasks. Upon completion, pre-service teachers demonstrate readiness to teach packaging and labeling modules, support school-based agribusiness initiatives, and guide learners in developing employable skills for food processing, product innovation, and sustainable enterprise development.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Food Product Development

4 units
 102-108 hours

This course equips pre-service teachers with the competencies to conceptualize, design, and develop innovative food products that address consumer demands, adhere to food safety standards, and promote environmental sustainability. It integrates foundational and applied concepts in food science, functional ingredients, formulation and processing techniques, prototype development, sensory evaluation, shelf-life assessment, packaging, labeling, and market analysis. Pre-service teachers develop practical skills in ingredient selection, product formulation, sensory testing, and commercialization planning using standard laboratory and industry procedures. The course emphasizes creativity, safety, quality, and sustainability by exploring trends in health-oriented foods, plant-based alternatives, and resource-efficient production systems. Instruction is delivered through lectures, laboratory experiments, design workshops, and simulated market testing activities. Pre-service teachers engage in practical tasks such as developing product concepts, preparing and evaluating prototypes, and refining formulations based on sensory and technical feedback. Assessment includes written examinations, product development portfolios, prototype presentations, and performance-based evaluations. Upon completion, pre-service teachers demonstrate readiness to teach food innovation modules, support school-based enterprises, and guide learners in developing employable skills for product design, research, and agribusiness entrepreneurship.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Sustainable Livestock Production

4 units
 102-108 hours

This course equips pre-service teachers with the competencies to manage and raise livestock, particularly ruminants such as cattle,

goats, and sheep, through sustainable, ethical, and resource-efficient production systems. It integrates animal welfare, environmental stewardship, and food security principles in the context of climate-resilient agriculture. The course develops practical skills in farm facility maintenance, forage production, animal health management, breeding operations, and dairy and meat production. It covers occupational health and safety, farm tool utilization, estimation and record keeping, and waste management in livestock raising operations. Instruction is delivered through lectures, farm demonstrations, and hands-on activities that emphasize biosecurity, productivity, and sustainability. Pre-service teachers engage in practical tasks such as forage preparation, herd management, animal monitoring, and breeding system implementation. Assessment includes written examinations, performance-based evaluations, and institutional competency checks. Upon completion, pre-service teachers demonstrate the ability to teach livestock production modules, promote animal welfare, and guide learners in applying sustainable practices for community-based and school-integrated livestock enterprises.

Annex E
Description of General Education Course Themes % CHED

Annex F
Description of Mandated Courses % CHED

Annex G

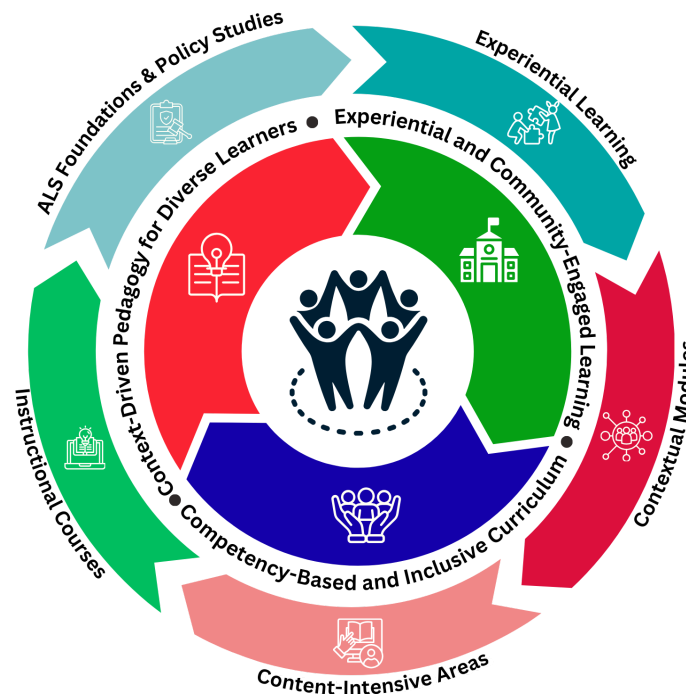
Undergraduate Certificate Courses

Annex G.1 Certificate in Alternative Learning System

1.1 Certificate Program Description

The Certificate in Alternative Learning System (ALS) is a certificate program in non-formal education that prepares pre-service teachers to work in diverse environments, including high-risk contexts such as corrective and rehabilitation facilities, conflict-affected, and remote communities. Anchored in context-driven adult learning and competency-based inclusive curriculum, it equips pre-service teachers to design, implement, and assess learning programs that promote equity and lifelong learning. Through six courses, pre-service teachers demonstrate competence in ALS foundations and learning strands, design contextualized modules, and apply flexible and inclusive teaching in real ALS contexts. They also learn to manage Community Learning Centers (CLCs), manage LIS reports, and mobilize partnerships for program sustainability. Assessment skills include the use of portfolios and ALS assessment forms to recognize learners' informal and experiential learning. Pre-service teachers emerge as competent, inclusive, and community-anchored educators, serving out-of-school youth and adults, and children in special cases, committed to the transformative mission of ALS.

1.2 Certificate Program Framework



The Certificate in Alternative Learning System (ALS) Framework is built on a cyclical design that highlights the continuous and interconnected development of pre-service ALS teachers.

The first layer of cyclical arrows represents the three foundational pillars of the program: Context-Driven Pedagogy for Diverse Learners, Experiential and Community-Engaged Learning, and Competency-Based and Inclusive Curriculum. These pillars ensure that teacher preparation remains responsive to learner contexts, grounded in lived community experiences, and aligned with outcomes-based and inclusive education.

The second or outer layer of cyclical arrows operationalizes the pillars: ALS Foundations and Policy Studies, Instructional Courses, Content-Intensive Areas, Contextual Modules, and Experiential Learning. Each area reinforces the others, demonstrating that ALS teacher education is not linear but dynamic and integrative.

At the center of the framework is the symbol of community and learner empowerment, emphasizing that the ultimate goal of the program is to prepare quality Filipino ALS teachers who can empower diverse learners and transform communities through inclusive, relevant, and lifelong learning opportunities.

1.3 Certificate Program Outcomes

Certificate in ALS Program Outcomes	Performance Indicators
1. Demonstrate mastery of the ALS frameworks, curriculum, and learning strands. Pre-service teachers show a strong understanding of the ALS philosophy, legal bases, policies, and curriculum design, integrating literacy, numeracy, life skills, and community engagement to support inclusive and transformative learning in diverse contexts.	1.1 Analyzes the key provisions of Republic Act 11510, DepEd ALS policies, and related international and national frameworks on non-formal education. 1.2 Explains the structure, competencies, and learning strands of the ALS basic education curriculum and their alignment with lifelong learning goals. 1.3 Unpacks and interprets ALS learning competencies and identifies appropriate learning outcomes for various learner contexts. 1.4 Selects, adapts, and organizes suitable learning materials and community resources aligned with ALS strand outcomes. 1.5 Develops and applies authentic and alternative assessment tasks consistent with ALS principles and learner-centered approaches.
2. Engage with relevant learning philosophies and theories to inform inclusive and flexible teaching practices in diverse ALS learning contexts. Pre-service teachers understand, analyze, and apply learning philosophies and theories—humanistic, constructivist, experiential, transformative, adult, heutagogical, and lifelong learning—to interpret learners’ contexts and guide the design of humane, inclusive, and responsive ALS learning experiences.	2.1 Identifies and explains key learning philosophies and theories that underpin the Alternative Learning System and their relevance to non-formal, inclusive, and lifelong education. 2.2 Compares and critiques major learning theories, highlighting their strengths, limitations, and practical implications for teaching out-of-school youth and adults in the Philippine context. 2.3 Contextualizes learning theories to the realities of ALS learners, including those in marginalized, displaced, or high-risk environments, demonstrating awareness of social, cultural, and economic influences on learning. 2.4 Applies insights from learning philosophies and theories to analyze learning situations and propose strategies that foster learner motivation, participation, and growth. 2.5 Designs a learning session plan or activity that reflects ALS learning philosophies and theories, demonstrating inclusive and learner-centered approaches appropriate to diverse contexts.

3. Facilitate learning processes that develop functional literacy, strengthen life skills, and prepare learners for diverse post-program pathways, including higher education, technical-vocational training, entrepreneurship, and employment. Pre-service teachers will effectively integrate modular and blended learning, ICT use, portfolio-based assessment, and career guidance to prepare learners for higher education, technical-vocational training, entrepreneurship, or work opportunities.	3.1 Facilitates inclusive learning sessions using appropriate learning modalities that achieve strand-based competencies. 3.2 Integrates functional life skills and employability activities (e.g., entrepreneurship, livelihood tasks) in lessons. 3.3 Guides learners in preparing and updating their individual learning portfolios. 3.4 Facilitates socioemotional learning sessions and career guidance linking learners to higher education, skills training, or work opportunities. 3.5 Documents learner progress and pathway decisions using ALS assessment tools.
4. Manage ALS program systems and community-based learning centers effectively. Pre-service teachers will demonstrate competencies in CLC-based management, enrollment, and reporting through the Learners' Information System (LIS), and mobilizing community partnerships and resources to sustain ALS delivery.	4.1 Prepares regular and participatory action plan for the Community Learning Center (CLC). 4.2 Encodes and updates learner enrolment and completion records in the LIS. 4.3 Generates and presents ALS progress and accomplishment reports to stakeholders. 4.4 Advocates and mobilizes community partnerships (e.g., LGUs, CSOs, TESDA, academe, industries) and local resources (e.g., venues, materials, volunteers) to sustain and expand ALS delivery. 4.5 Organizes learner activities such as Kumustahan, portfolio assessment, or moving-up rites.
5. Embody professional values and dispositions that advance inclusivity, lifelong learning, and community transformation. Pre-service teachers will exemplify ALS values like caring, self-reliant, independent, productive, and patriotic, as anchored on RA 11510, reflective practice, resilience, collaboration, and empowerment-oriented leadership, serving as advocates of equity, social transformation, and education-driven community development.	5.1 Demonstrates respect for cultural and social diversity in interactions with learners and stakeholders. 5.2 Maintains a reflective journal or learning log documenting teaching challenges and personal growth. 5.3 Practices teacher agency (e.g., adaptive, resourceful) when faced with various learner, community, and other related constraints (e.g., lack of electricity, multi-age groups, emergencies). 5.4 Collaborates with peers and mentors in sharing insights, advocacies, and emerging best practices in Alternative Learning System instruction and community engagement. 5.5 Engages in continuous professional growth through participation in field exposure, learning action sessions, seminars, and other capacity-building activities that support lifelong learning and career readiness in teaching.

1.4 Sample Certificate Program Mapping

Certificate in ALS Courses	PO1	PO2	PO3	PO4	PO5
1. Overview and Foundations of ALS Curriculum	I	I	I	I	P
2. Learning Theories and Philosophies in ALS	I	I	I	I	P
3. Facilitating Learning in ALS	P	P	P	I	D
4. Management of ALS Programs and Community Learning Centers	P	P	D	D	D
5. Advocacy and Social Mobilization in ALS	D	P	D	D	D
6. Inquiry and Reflective Practices in ALS	D	D	D	D	D

1.5 Certificate Program Course Descriptions

Course Title	Overview and Foundations of ALS Curriculum
Course Credits	3 units
Contact Hours	51-54 hours
Prerequisite/s	
Description	This course provides pre-service teachers with a broad understanding of the Alternative Learning System as a vital component of non-formal education in the Philippines. It examines its historical and legal foundations, including Republic Acts 9155 and 11510, along with national and international policies that promote non-formal, inclusive, and lifelong learning. The course explores the structure and content of the ALS within the prevailing Basic Education Curriculum, focusing on its competencies, learning strands, and resources that foster functional literacy, numeracy, life skills, citizenship, and employability. Pre-service teachers study how learning is assessed in formal, non-formal, and informal settings, emphasizing authentic and alternative forms of assessment suited to diverse learner contexts. They participate in policy discussions, curriculum mapping, learner profiling, and case analyses of community-based ALS programs. They perform practical tasks such as unpacking learning competencies, designing learning activities, materials, and linking community resources to learning strands. Through collaborative discussions, site visits, and reflective documentation, pre-service teachers develop a grounded understanding of how ALS policies, curriculum, and assessment practices advance equity, inclusion, and transformation in education for all learners and communities.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Learning Theories and Philosophies in ALS
3 units
51-54 hours

This course strengthens pre-service teachers' understanding of the philosophical and theoretical foundations that guide the Alternative Learning System as a form of non-formal education in the Philippines. It examines key learning theories relevant to ALS—humanistic, constructivist, experiential, transformative, adult learning, heutagogical, and lifelong learning, including the Convergence learning theory—and explains how these philosophies, theories, and frameworks shape how learners acquire knowledge, develop competencies, and find meaning in diverse and often challenging contexts. The course reinterprets humanism in its contemporary sense, viewing learners as whole persons whose learning is influenced by their material realities and mediated by technology, digital environments, and artificial intelligence. Pre-service teachers analyze how these foundations inform learning among out-of-school youth and adults, as well as children and adults experiencing disability, displacement, geographic isolation, social or economic hardship, and other difficult circumstances. Through critical reflection, case analysis, and theory-to-practice synthesis, pre-service teachers learn to design humane, inclusive, and technology-responsive learning environments that nurture human potential and prepare learners to become engaged citizens, productive workers, and entrepreneurs in a rapidly changing world.

Course Title	Management of ALS Programs and Community Learning Centers
Course Credits	3 units
Contact Hours	51-54 hours
Prerequisite/s	
Description	This course equips pre-service teachers with the competencies to effectively manage Alternative Learning System (ALS) programs and Community Learning Centers (CLCs). It introduces key ALS stakeholders and their roles in advancing education initiatives while providing practical experience in establishing and managing CLCs according to their typologies. Pre-service teachers engage in hands-on use of the Learners' Information System (LIS) for enrollment, updating, and reporting learner data, while upholding data privacy and ethics, and apply participatory approaches in planning, monitoring, and evaluation through the use of standard reporting templates such as mapping tools, individual learning agreement (ILA), and recognition of prior learning (RPL). Practice-based learning activities include LIS encoding drills, community mapping, mock CLC planning sessions, and organizing learner activities. Pre-service teachers prepare a comprehensive CLC management plan, and generate progress reports using simulated data. DepEd LIS manuals, ALS forms, and sample CLC plans serve as primary references. Assessment focuses on hands-on LIS encoding, the quality of submitted management plans, and oral presentations. By the end of the course, pre-service teachers submit a CLC management plan, present a progress report, successfully encode a learner in the LIS, and propose a well-organized learner activity.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Facilitating Learning in ALS

3 units
51-54 hours

This course develops the competencies of pre-service teachers to facilitate literacy, numeracy, life skills, employability, and post-program pathways among ALS learners. It emphasizes the integration of various learning modalities—such as modular, media-based, and blended approaches—and the strategic use of ICT in low-resource contexts to ensure inclusive and flexible instruction. Pre-service teachers design and deliver functional literacy and numeracy lessons that integrate health, environmental, financial, and digital literacies, making learning practical, relevant, and community-responsive. The course builds capacity to design holistic learning experiences aligned with ALS competencies, TESDA qualifications, and lifelong learning frameworks. It further trains pre-service teachers to apply ALS assessment tools such as the Assessment of Basic Literacy (ABL), Functional Literacy Test (FLT), and learner portfolios to monitor progress and support individualized learning pathways. It also underscores socioemotional learning and career guidance to prepare learners for higher education, technical-vocational training, entrepreneurship, or employment. Learning activities include workshops, role-playing, and practicum-based applications, while assessment tasks involve demonstration teaching, use of ALS assessment tools, and portfolio design—enabling pre-service teachers to demonstrate competence in facilitating lifelong learning and empowering ALS learners to become self-reliant and productive members of society.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Advocacy and Social Mobilization in ALS
3 units
51-54 hours

This course develops the professional values, dispositions, and advocacy skills essential for teachers in the Alternative Learning System, as mandated by Republic Act 11510 and aligned with the mission of inclusive and transformative education. It emphasizes the principles of Advocacy and Social Mobilization, guiding pre-service teachers to design and implement participatory action plans for Community Learning Centers, generate and present progress reports to stakeholders, and organize learner-centered activities that promote engagement and achievement. The course nurtures pre-service teachers to embody the core values of caring, self-reliance, independence, productivity, and patriotism while cultivating reflective practice, resilience, collaboration, and empowerment-oriented leadership. Through community immersion, mentorship, and reflective practice, pre-service teachers engage with learners, parents, and local leaders to advocate and mobilize partnerships with government units, civil society organizations, educational institutions, and industries to sustain and expand ALS delivery. Course outputs include a community assessment report, an advocacy and mobilization campaign proposal, and a community engagement portfolio that demonstrate growth as reflective, socially responsible educators committed to advancing lifelong learning and equity through education-driven social transformation.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Inquiry and Reflective Practices in ALS

3 units
51-54 hours

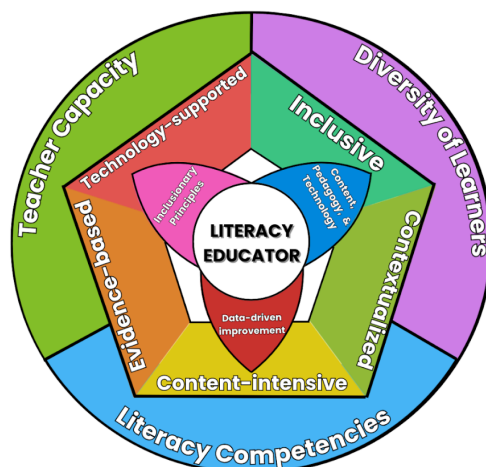
This course enables pre-service teachers to derive insights from their collective experiences in the field, emphasizing reflective inquiry, problem-solving, and technology-enhanced documentation rather than formal academic research. It trains students to identify practical challenges in ALS implementation—such as learner participation, resource limitations, and partnership coordination—and to design simple, innovative, and often technology-supported solutions that improve learning delivery and access. Using traditional and digital tools such as learning logs, online journals, mobile-based surveys, digital storytelling, and e-portfolios, students document and analyze their field experiences. They synthesize and present their reflections through digital journals, case studies, video narratives, or mini-project reports that demonstrate the use of technology to enhance inclusivity, voice, and community connection. Mentorship sessions, peer exchanges, and feedback loops help students refine their innovations and ground their practices in the ALS principles of flexibility, accessibility, and responsiveness. By the end of the course, they produce a capstone project, a digital portfolio showcasing their field-based insights and creative interventions that exemplify reflective, adaptive, and learner-centered practice in non-formal education.

Annex G.2 Certificate in Literacy Education

2.1 Certificate Program Description

This program offers a strong foundation in literacy education, equipping pre-service teachers with the knowledge, skills, and pedagogical expertise necessary to foster literacy development in diverse learners. Structured around six core courses, it examines contemporary trends, resource design, assessment practices, program development, multidimensional literacy instruction, and targeted interventions. Through critical analysis, hands-on application, and the design of lessons and programs, pre-service teachers build the capacity to deliver inclusive and evidence-based literacy instruction. The program highlights reflective practice, learner-centered approaches, and data-driven strategies to support effective literacy learning in diverse educational settings.

2.2 Certificate Program Framework



The Certificate in Literacy Education is driven by the urgent need for addressing diversity of learners and learning contexts, enhancing literacy competencies, and strengthening teacher capacity, adaptability, and support. The curriculum framework is designed to be inclusive, contextualized, content-intensive, evidence-based, and technology-supported. It integrates inclusionary principles in the design and conduct of literacy instruction and assessment for all learners, grounding teaching in learners' educational and social realities. The framework deepens knowledge of key language and literacy concepts while utilizing relevant and up-to-date information to guide instructional and assessment decisions. Additionally, it leverages technology to enhance teaching and assessment practices, demonstrating strong content knowledge alongside pedagogical and technological competencies, and employs data to continuously improve literacy instruction and outcomes.

2.3 Certificate Program Outcomes

Certificate in Literacy Education
Program Outcomes

Performance Indicators

1. Demonstrates pedagogical content knowledge and technological competencies in literacy instruction and assessment in diverse contexts	1.1 Demonstrate how literacy competencies can be developed among diverse learners 1.2 Create a literacy lesson for a specific group of learners 1.3 Apply appropriate approaches and/or strategies in literacy instruction 1.4 Evaluate learning resources used in literacy education 1.5 Create learning resources appropriate for literacy teaching and learning of a specific group of learners 1.6 Construct literacy assessment tools appropriate to (a) particular learner(s) 1.7 Implement procedures and tools in the assessment of literacy performance 1.8 Examine factors that contribute to the effectiveness of a literacy program 1.9 Describe how various literacies can be fostered among diverse learners. Develop a lesson for teaching a particular literacy using appropriate instructional materials 1.10 Utilize an appropriate approach and/or strategy in teaching a specific literacy 1.11 Identify the strengths and limitations of learners in terms of their literacy schools 1.12 Design a literacy intervention that: takes into account the context(s)/reality(ies) of (a) learner(s); addresses the strengths and needs of a particular (group of) learner/s; and incorporates the use of evidence-based techniques and strategies
2. Integrates inclusionary principles in the design and conduct of literacy instruction and assessment for learners in school- and community-based settings	2.1 Compare and contrast different trends in literacy teaching and learning 2.2 Describe the role of learning resources, including but not limited to print and digital materials, in literacy teaching and learning 2.3 Examine the principles and procedures in designing and planning learning resources for literacy education 2.4 Discuss the nature and purposes of literacy assessment 2.5 Examine how literacy abilities (and correlates of literacy performance) are assessed 2.6 Analyze the basic principles for developing, implementing, and evaluating various types of literacy programs 2.7 Critique different literacy programs 2.8 Appraise the theories and principles that support the development of various literacies

3. Uses data to deliver and continuously improve literacy instruction and outcomes to address learners' needs	3.1 Analyze literacy assessment data and their implications for literacy education 3.2 Recommend improvements to an existing literacy program (3.3 Implement literacy intervention informed by learner behavior and performance 3.4 Monitor the progress of each learner vis-à-vis the delivery of instruction 3.5 Make practical literacy-related recommendations for a particular (group of) learner/s
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2.4 Sample Certificate Program Mapping

Certificate in Literacy Education Courses	PO1	PO2	PO3
1. Trends in Literacy Education	P	P	
2. Learning Resources in Literacy Education	P	P	
3. Assessment of Literacy Abilities	P	I	P
4. Design and Evaluation of Literacy Programs	I	P	P
5. Teaching Multiple Literacies	D	I	
6. Literacy Interventions	D		D

2.5 Certificate Program Course Descriptions

Course Title	Trends in Literacy Education
Course Credits	3 units
Contact Hours	51-54 hours
Prerequisite/s	Theories and Approaches in Literacy Education [ProfEd]
Description	Trends in Literacy Education is a course that prepares pre-service teachers to examine different trends in literacy teaching and learning. It also provides them with the opportunity to demonstrate how literacy competencies can be developed among diverse learners and to apply appropriate approaches and strategies in literacy instruction. Ultimately, pre-service teachers learn to create a literacy lesson for a specific group of learners by applying these concepts. Additionally, this course examines contemporary trends, diverse approaches, and appropriate strategies in literacy education, equipping pre-service teachers with the competencies necessary to teach a range of learners. Students engage in a critical analysis of current perspectives on literacy instruction, develop practical skills for supporting literacy growth across diverse learner groups, and design effective literacy lessons. Finally, the course highlights the use of inclusive, research-informed practices to promote literacy development for all learners. This course combines lecture-discussions with explicit and implicit instruction to strengthen foundational knowledge and encourage active learning. Preservice teachers participate in workshops, lesson planning, and micro-teaching to practice and refine instructional skills. Assignments, group activities, and assessments provide

opportunities for collaboration, application, and evaluation of literacy competencies.

Course Title	Learning Resources in Literacy Education
Course Credits	3 units
Contact Hours	51-54 hours
Prerequisite/s	Theories and Approaches in Literacy Education [ProfEd]
Description	Learning Resources in Literacy Education is a course that immerses pre-service teachers in the role of learning resources in literacy teaching and learning. Throughout the course, they examine the principles and procedures for designing and planning learning resources as well as evaluating their use in literacy education. The course also provides the opportunity to design learning resources appropriate for literacy teaching and learning of a specific group of learners. Moreover, the course introduces key principles and approaches in selecting, designing, and utilizing learning resources. Pre-service teachers examine the vital role of diverse and culturally responsive materials in enriching literacy teaching and learning. They get to develop competencies in critically assessing existing resources and in developing contextualized and learner-centered materials that address the literacy needs of specific groups.

Furthermore, the course emphasizes aligning resource development with best practices and essential literacy competencies. Pre-service teachers participate in lecture-discussions and hands-on workshops featuring both explicit and implicit instruction to enhance their knowledge of literacy principles and practices. Finally, the course emphasizes collaborative learning through paired and small-group activities, critical evaluation and creation of learning materials, and continuous assessments to support the practical application of literacy strategies and the enhancement of teaching skills.

Course Title
Course Credits
Contact Hours
Prerequisite/s

Description

Assessment of Literacy Abilities

3 units

51-54 hours

Theories and Approaches in Literacy Education
[ProfEd]

Assessment of Literacy Abilities is designed to equip pre-service teachers with skills and knowledge of literacy assessment. Pre-service teachers will examine how literacy abilities are assessed. The course provides them with the skills to design literacy assessment tools appropriate to (a) particular learner(s) and to implement procedures and tools for assessing literacy performance. Additionally, the course equips them to analyze assessment data and their implications in literacy learning. Pre-service teachers are immersed in a comprehensive study of strategies for assessing the literacy skills of diverse learners. Moreover, the

course addresses the fundamental principles and purposes of literacy assessment; introduces a range of methods for assessing literacy performance; and guides students in designing assessment tools suited to varied learner profiles. Pre-service teachers engage in practical experiences that include administering assessments, analyzing results, and using data to enhance literacy instruction. The course highlights equitable and inclusive assessment practices to ensure responsiveness to learners' diverse needs. It involves lecture-discussions and workshops that use both explicit and implicit instruction. Pre-service teachers participate in collaborative activities, fieldwork that includes observations, literacy assessments, designing literacy assessment tools, and completing assignments and various assessments to promote the practical application and mastery of literacy assessment skills.

Course Title
Course Credits
Contact Hours
Prerequisite/s

Design and Evaluation of Literacy Programs
3 units
51-54 hours
Theories and Approaches in Literacy Education
[ProfEd]

Description

Design, Implementation, and Evaluation of Literacy Programs is a course that prepares pre-service teachers to analyze the basic principles for developing, implementing, and evaluating various types of literacy programs. It also provides the opportunity to critique different literacy programs and to examine factors that contribute to their effectiveness. Ultimately, pre-service teachers learn to recommend improvements to an existing literacy program. This course also explores the foundational principles and emerging trends in the design and evaluation of literacy programs. Pre-service teachers examine the essential elements that influence program effectiveness, compare and contrast various literacy programs, and strengthen their ability to make informed recommendations for program enhancement. The course likewise emphasizes evidence-based practices and practical strategies that support the literacy development of diverse learners. Pre-service teachers engage in lecture-discussions and workshops that incorporate both explicit and implicit instruction to develop their knowledge of literacy programs. Learning experiences include pair and small-group activities, fieldwork involving the observation of literacy programs in practice, along with assignments and assessments designed to connect theory with practice and effectively measure learners' progress.

Course Title
Course Credits
Contact Hours
Prerequisite/s

Teaching Multiple Literacies
3 units
51-54 hours
Theories and Approaches in Literacy Education
[ProfEd]

Description

Teaching Multiple Literacies is a course designed to prepare pre-service teachers to analyze the theories and principles that support the development of various literacies. The course provides opportunities for them to demonstrate how various literacies can be fostered among diverse learners. Additionally, pre-service teachers learn to design a lesson for teaching a particular literacy using appropriate instructional materials and to apply an appropriate approach and/or strategy. This course examines the theories, principles, and instructional approaches for teaching multiple literacies, including but not limited to reading, digital, media, financial, and cultural literacies. It emphasizes the use of effective strategies, appropriate learning materials, and assessment tools to promote literacy development in different contexts. Pre-service teachers engage in research-based practices, design purposeful lessons, and apply instructional methods that support literacy development across a range of domains. In this course, learners engage in lecture-discussions and hands-on workshops that use both explicit and implicit instruction to master the teaching of multiple literacies. The course includes pair and small-group activities, lesson planning, micro-teaching sessions, assignments, and assessments—all designed to strengthen the understanding and development of multiple literacies.

Course Title	Literacy Interventions
Course Credits	3 units
Contact Hours	51-54 hours
Prerequisite/s	Theories and Approaches in Literacy Education [ProfEd]
Description	Literacy Interventions is designed to prepare pre-service teachers to assess the literacy performance of a learner/s. The course provides the knowledge and skills necessary to design a literacy intervention that takes into account the context(s)/reality(ies) of (a) learner(s), addresses the needs of a particular (group of) learner/s, and incorporates the use of evidence-based strategies. Furthermore, pre-service teachers implement a literacy intervention informed by learner behavior and performance, monitor the progress of each learner vis-à-vis the delivery of instruction, and make practical literacy-related recommendations. This course explores key approaches for designing, implementing, and evaluating various literacy interventions. Pre-service teachers learn to assess literacy performance, create evidence-based intervention plans, monitor progress, and recommend improvements to strengthen literacy outcomes. The course emphasizes data-informed instructional decisions and continuous refinement of practice to support effective literacy development. In this course, pre-service teachers participate in lecture-discussions and workshops that integrate both explicit and implicit instruction to deepen their understanding of literacy interventions. The course features pair and small-group activities, fieldwork involving literacy assessments and intervention sessions, case studies, lesson planning, assignments, and assessments designed to develop skills in literacy interventions.

Annex G.3 Certificate in Indigenous Peoples Education

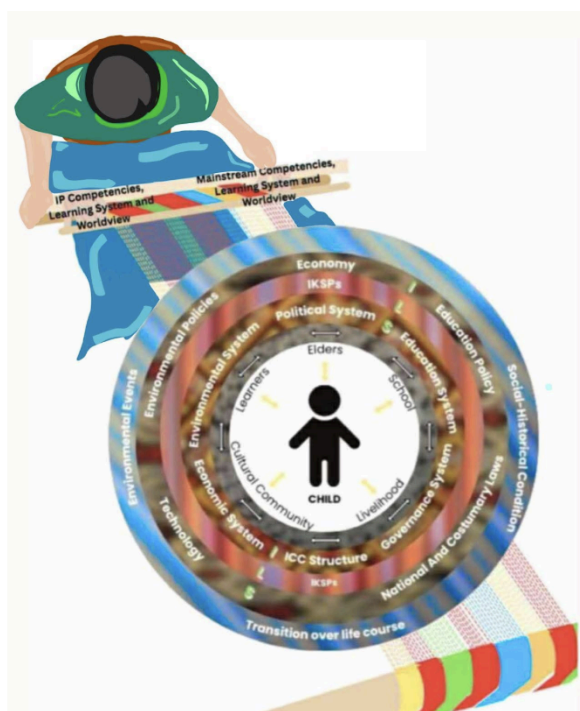
3.1 Certificate Program Description

The Certificate in Indigenous Peoples Education (IPEd) is an undergraduate certificate program designed to complement a Pre-service teacher's bachelor's degree while strengthening preparation for teaching and community engagement in Indigenous Peoples (IP) contexts.

It develops culturally responsive educators with the knowledge, attitudes, values and skills (KAVS) necessary in developing and facilitating contextualized and meaningful learning experiences for IP learners based on the appropriate interplay of Indigenous Knowledge Systems and Practices (IKSPs) and the national education curriculum.

Aligned with the principle of free, prior, and informed consent, the Program promotes collaboration with community elders and culture bearers in the contextualization of the curriculum, learning delivery, learning environment, and learning assessment, enabling graduates to be co-advocates in nurturing the cultural heritage rights and welfare of Indigenous Cultural Communities (ICCs) through IP Education.

3.2 Certificate Program Framework



The Certificate Program in Indigenous Peoples Education is designed to cultivate culturally responsive educators who are capable of mediating and facilitating the interface between Indigenous Peoples education systems and worldviews, and the broader Filipino educational paradigm. Anchored on and driven by the Indigenous Peoples Rights Act (IPRA), the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and the Department of Education's Indigenous Peoples Education Policy Framework (Department Order 62 s 2011), the Program grounds the teacher education program in community-based contexts including Indigenous Education Systems, the rights-based framework, and the various aspects of the Indigenous Peoples advocacy that have a bearing on education. With teachers who promote cultural integrity, respect for diversity, community-based education approaches, and inclusive pedagogy, the program hopes to nurture Indigenous Peoples learners who are capable of engaging the various layers and dynamics of the wider society while promoting their community's rights and self-determination.

3.3 Certificate Program Outcomes

Certificate in Indigenous Peoples Education Program Outcomes	Performance Indicators
1. Demonstrate a critical, rights-based, and culturally grounded understanding of Indigenous Peoples Education through the integration of Indigenous Knowledge Systems, historical consciousness, legal frameworks, and ethical principles that promote self-determination, uphold cultural integrity, and sustain inclusive learning communities.	1.1 Analyze and articulate how historical, legal, and cultural frameworks shape the policies, practices, and challenges of Indigenous Peoples Education (IPED) in the Philippine context. 1.2 Explain the historical evolution and philosophical foundations of education in relation to cultural diversity and Indigenous Peoples' educational experience. 1.3 Demonstrate ethical sensitivity and professional integrity in addressing cultural, legal, and social issues affecting indigenous communities and their right to education. 1.4 Establish, maintain, and strengthen partnerships with Indigenous communities, organizations, elders, and culture bearers to collaboratively support IPED implementation, including mapping of cultural activities and identification of Indigenous Peoples' competencies across subject areas. 1.5 Design and implement culturally responsive and decolonial learning strategies that integrate indigenous worldviews, values, and ethical

	considerations in classroom and community contexts.
2. Demonstrate mastery of the discipline-based concepts in relation to Indigenous Knowledge Systems and Practices (IKSP), ancestral domain, indigenous governance and traditional resource management, and basic rights of the IP Community.	2.1 Explain the relationality between discipline-based concepts and IKSPs, ancestral domain, and indigenous resource management with clarity and accuracy. 2.2 Engage in community exposure activities by participating in indigenous rituals, livelihood practices, or ecological stewardship initiatives. 2.3 Produce reflective documentation (most significant change) that demonstrates a deep understanding of IKSP, ancestral domain issues, resource management, and IP rights.
3. Adapt to diverse environmental and cultural conditions by optimizing and innovating available resources and integrating appropriate technologies in varied learning contexts as an IPED teacher.	3.1 Select and adapt locally available materials and community resources to create relevant teaching aids. 3.2 Implement innovative practices that respond to community-specific educational needs while respecting Indigenous cultural values.
4. Promote the cause of Indigenous Peoples Education (IPED) with pride and dignity by embodying appropriate knowledge, attitudes, values and skills (KAVS) as a duty bearer and culture worker.	4.1 Recognize and appreciate the validity and integrity of the indigenous knowledge, skills, and practices (IKSPs) and the indigenous learning system. 4.2 Facilitate learning activities that promote cultural consciousness, inclusivity, and respect for diversity. 4.3 Advocate for the recognition and protection of the basic rights of IP learners and communities through culturally responsive teaching.
5. Demonstrate the ability to interface DepEd learning competencies with community-identified competencies to ensure culturally responsive, contextually grounded, and inclusive curriculum implementation.	5.1 Craft indigenized competencies based on ICC cultural standards to improve IP learners' Learning outcomes. 5.2 Analyze mainstream curriculum, topics, and competencies that are parallel to IKSPs and ILS. 5.3 Contextualize (localize and indigenize) national standards through Indigenous pedagogies, languages, and culturally appropriate practices.
6. Apply indigenous methodologies and approaches through contextualized instruction and research-based initiatives in diverse learning content and contexts as an ethno-pedagogy practitioner.	6.1 Conduct participatory research (e.g., community interviews, participant observation) with the community to develop culturally responsive teaching-learning methodologies and materials. 6.2 Develop and implement innovative uses of available resources (local materials, community expertise) to support IPED curriculum delivery. 6.3 Conduct validation of developed teaching-learning materials with the elders and culture-bearers. 6.4 Apply appropriate digital and non-digital technologies that suit the learners' context and community conditions.

7. Construct context-sensitive and participatory assessments that recognize indigenous ways of knowing, valuing traditional knowledge validation processes alongside authentic evaluation methods.	7.1 Implement holistic assessment approaches that consider the spiritual, emotional, physical, and mental aspects of learning, consistent with Indigenous worldviews, while recognizing their interconnection with broader community and system processes. 7.2 Develop assessments that reflect the community's values, traditions, and practices, promoting authentic learning and assessment experiences. 7.3 Incorporate assessment approaches that are consistent with Indigenous cultural practices, such as storytelling, observation, and peer assessment. 7.4 Engage community elders and culture bearers as partners in assessing learners' Indigenous Peoples Education (IPEd) competencies to ensure cultural accuracy, authenticity, and contextual relevance. 7.5 Conduct system-level assessments to evaluate the effectiveness of Indigenous Peoples Education (IPEd) facilitation processes—including teaching practices, community engagement, curriculum implementation, and institutional support systems—using participatory and culturally grounded evaluation frameworks validated by Indigenous communities.
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3.4 Sample Certificate Program Mapping

Certificate Indigenous Peoples Education Courses	PO1	PO2	PO3	PO4	PO5
1. Cultural Anthropology and Indigenous Knowledge Systems	I	I		I	
2. Historical, Legal, and Ethical Foundations of Indigenous Peoples Education	I	I		I	
3. Indigenous Education Systems		P	P	P	
4. Curriculum Development in Indigenous Peoples Education		P	P	P	P
5. Assessment and Evaluation in Indigenous Peoples Education	D	D	P	P	D
6. Teaching and Learning in Indigenous Peoples Education	D	D	D	P	P

3.5 Certificate Program Course Descriptions

Course Title	Cultural Anthropology and Indigenous Knowledge Systems
Course Credits	3 units
Contact Hours	51-54 hours
Prerequisite/s	

Description

This course equips pre-service teachers with a strong foundation in Cultural Anthropology and Indigenous Knowledge Systems and Practices (IKSP) as they relate to education, identity, and community life. It examines how Indigenous communities create, preserve, and transmit knowledge through lived experiences, rituals, oral traditions, ecological relationships, and social institutions. A clear working knowledge of tangible and intangible culture, including their elements and features, and attitudes toward culture, is treated as a mandatory core component. The course also develops cultural sensitivity and advances learners toward cultural competence as essential dispositions for future educators.

The course critically engages concepts such as decolonization, decoloniality, indigeneity, and indigenization of knowledge, challenging dominant Western epistemologies and affirming culturally grounded ways of knowing. As it explores decolonizing methodologies, it lays out the urgent issues and persistent concerns faced by ICCs/IPs, including land dispossession, cultural marginalization, misrepresentation, and inequitable access to education and resources.

Through ethnographic observation, reflection, and cultural immersion, pre-service teachers learn to engage respectfully with Indigenous knowledge as living, dynamic, and community-based systems. The course culminates in an analytical paper examining community origin narratives and how these have been reshaped by contemporary educational developments.

Course Title	Historical, Legal and Ethical Foundations of Indigenous Peoples Education
Course Credits	3 units
Contact Hours	51-54 hours
Prerequisite/s	Cultural Anthropology and Indigenous Knowledge Systems
Description	This course examines the historical, legal, and ethical foundations of Indigenous Peoples Education (IPEd) in the Philippines. It examines the evolution of educational systems and corresponding policies from precolonial traditions through colonial and postcolonial transformations, situating contemporary IPEd initiatives within broader struggles for self-determination, human rights, and cultural integrity. Pre-service teachers critically analyze key legal frameworks that uphold Indigenous Peoples' rights to education and ancestral domains, with the 1987 Philippine Constitution providing the impetus and operationalized primarily through the Indigenous Peoples Rights Act of 1997 (RA 8371), the Bangsamoro Indigenous Peoples Rights Act (BIPA), the DepEd IPEd Policy Framework, and reinforced by relevant international instruments. Emphasis is placed on ethical responsibilities in advancing inclusive and rights-based education, particularly the principles of Free, Prior, and Informed Consent (FPIC), community participation, and Indigenous governance of education. Through case studies and critical reflection, students develop justice-oriented perspectives for implementing IPEd in both formal and community-based contexts. By the end of the course, they will produce a policy proposal addressing identified gaps or challenges in Indigenous Peoples Education, grounded in historical analysis, aligned with existing legal frameworks, and guided by ethical principles that respect Indigenous rights and knowledge systems.

Course Title
Course Credits
Contact Hours
Prerequisite/s

Indigenous Education Systems

3 units

51-54 hours

Cultural Anthropology and Indigenous Knowledge Systems;

Historical, Legal and Ethical Foundations of Indigenous Peoples Education

This course introduces Pre-service teachers to the nature and dynamics of Indigenous Education Systems as the systematized delivery system that has evolved in relation to the knowledge transmission-based Indigenous Learning Systems of ICCs/IPs that are currently experienced by them in contemporary times.

The primary purpose is to help teachers appreciate and put forward indigenous knowledges into their teaching practice.

Description

Through exposure to community activities and interact with culture bearers, knowledge holders and elders using both cultural- anthropology and education lenses, Pre-service teacher will encounter the education system of the IP community - how IKSPs have their own scope and sequence (curriculum), how they are transmitted (learning delivery), how learning is assessed (assessment), and how learning outcomes are communicated and upheld by the community (education philosophy). They will also analyze the impacts of various social forces on the continuity of Indigenous Education Systems, together with the community's efforts

to engage contemporary education challenges.

At the end of the course, guided by the community's practices and protocols through community exposure, they will contribute to the documentation of the community's Indigenous Education Systems, the development of education resources needed by the community, or similar education initiatives being undertaken by the community.

Course Title

Course Credits

Contact Hours

Prerequisite/s

Description

Curriculum Development in Indigenous Peoples Education

3 units

51-54 hours

Cultural Anthropology and Indigenous Knowledge Systems;
Historical, Legal and Ethical Foundations of Indigenous Peoples Education;
Indigenous Education Systems

This course provides Pre-service teachers with a historical overview of curriculum development in Indigenous Peoples Education (IPEd) efforts in the Philippines. Students will learn about, analyze, and critique the initiatives of various pioneering institutions in the Philippines in implementing culture-based education in the context of Indigenous Cultural Communities (ICCs). How these institutions' experiences shaped current DepEd policies and frameworks for Indigenous Peoples Education (IPEd) will also be explored.

Through interactive discussions, community exposure, and hands-on projects, Pre-service teachers will learn the rudiments of designing curricula appropriate for IP learners based on the experiences of pioneer IPEd implementing institutions and public schools implementing IPEd. This will include practical skills in crafting syllabi, lesson plans, and learning resources that interface national competencies and standards with indigenous knowledge and community learning standards. Pre-service teachers will also analyze the current curriculum implementation of IPEd in private community-based learning institutions and public schools, as they engage the challenges of contemporary times.

This course enables Pre-service teachers to create culturally responsive teaching practices and learning environments that honor the richness of indigenous cultures while meeting learning objectives, and cultivates their commitment to promoting cultural diversity and equity in education.

Course Title	Assessment and Evaluation in Indigenous Peoples Education
Course Credits	3 units
Contact Hours	51-54 hours
Prerequisite/s	Cultural Anthropology and Indigenous Knowledge Systems; Historical, Legal, and Ethical Foundations of Indigenous Peoples Education; Indigenous Education Systems; Curriculum Development in Indigenous Peoples Education
Description	This course prepares Pre-service teachers to design, implement, and evaluate culturally grounded and community-centered assessment systems for Indigenous learners. Anchored in rights-based, ethical, and culturally responsive principles, it examines the historical, legal, and philosophical foundations of Indigenous Peoples Education (IPEd) and their implications for assessment in diverse Indigenous contexts. Drawing from Indigenous Knowledge Systems and Practices (IKSPs), Indigenous Learning Systems (ILS), and community-defined competencies, the course develops the ability to create holistic, context-sensitive, and participatory assessment tools that honor Indigenous worldviews. Students learn to align DepEd competencies with community cultural learning standards, apply Indigenous methodologies, and use appropriate digital and non-digital technologies.

Through experiential and community-engaged activities—including consultation with elders and culture-bearers, curriculum development, and reflective documentation—students strengthen their capacity to implement authentic, decolonial, and culturally ethical assessment practices. Emphasis is placed on traditional validation processes such as storytelling, observation, performance-based tasks, and community-based evaluation.

By the end of the course, students will be able to develop culturally responsive and system-level assessment plans that uphold Indigenous rights, promote self-determination, protect cultural integrity, and support inclusive, community-rooted IPEd implementation.

By the end of the course, pre-service teachers will be able to conduct individual, classroom, and co-create culturally responsive and system-level assessments and evaluation plans that uphold Indigenous rights, promote self-determination, protect cultural integrity, and support inclusive, community-rooted curriculum implementation within Indigenous Peoples Education.

Course Title

Course Credits

Contact Hours

Prerequisite/s

Description

Teaching and Learning in Indigenous Peoples Education

3 units

51-54 hours

Cultural Anthropology and Indigenous Knowledge Systems;
Historical, Legal, and Ethical Foundations of Indigenous Peoples Education;
Indigenous Education Systems;
Curriculum Development in Indigenous Peoples Education;
Assessment and Evaluation in Indigenous Peoples Education

This course provides a critical exploration of pedagogical theories, principles, and practices that shape effective and culturally

grounded teaching in Indigenous Peoples Education (IPEd). It examines how Indigenous Education Systems (IES) and indigenous ways of knowing inform culturally responsive and sustaining pedagogies that honor community knowledges, languages, and worldviews.

Building on previous courses, students will engage with various instructional approaches such as place-based learning, storytelling, land-based education, and multigrade or mixed-age teaching, common in indigenous contexts. Emphasis is placed on community-embedded instruction that fosters inclusive, participatory, and identity-affirming learning experiences. Culturally responsive and community-centered learning assessment will also be applied.

The course also focuses on the design and development of localized and culture-responsive learning resources that integrate indigenous languages, symbols, and cultural content.

Through field-based collaboration with culture bearers and community partners, Pre-service teachers will ensure that learning resources are contextually accurate and respectful of indigenous heritage.

By the end of the course, they are expected to demonstrate culturally responsive teaching through demonstration teaching and to produce localized instructional materials that promote inclusivity, strengthen cultural identity and intergenerational relations, and sustain indigenous knowledges and traditions.

Annex G.4 Certificate in Islamic Education

4.1 Certificate Program Description

The Certificate in Islamic Education is a six-course add-on undergraduate certificate for pre-service teachers, designed to strengthen teacher quality in Islamic Education in the Philippines. Anchored in faith-based, equity-oriented, rights-based, context-sensitive, and integrated principles and Islamic ethics, the program prepares future teachers to deliver balanced Islamic and conventional learning that supports national aspirations for quality education and resilience, while honoring Bangsamoro aspirations and nurturing Muslim Filipino identity and heritage. The curriculum integrates foundational Islamic knowledge with interdisciplinary perspectives and community-based learning, emphasizing reflective practice, peace-oriented education, and responsible stewardship (khalifa al-ard). The program is responsive to emerging practices and realities in the field, including the Arabic Language and Islamic Values Education (ALIVE) delivery, Islamic Studies and Arabic Language (ISAL) in BARMM, and Traditional and Private Madaris. The program also considers the recruitment and professional development of *asatidz*, community- and donor-supported education ecosystems, and the continuing reforms and professional standards shaping Islamic education. Designed to complement the *reframed* Pre-service Teacher Education Curriculum in the Philippines, the Certificate in Islamic Education integrates (1) interdisciplinary design, (2) Islamic values-based content, (3) mentorship pedagogy, and (4) experiential learning through observation, assistantship, and internship in various Islamic education settings.

Admission Requirements

Applicants must provide evidence of prior learning in Arabic and Islamic Studies at the intermediate to advanced level, demonstrated through at least one of the following:

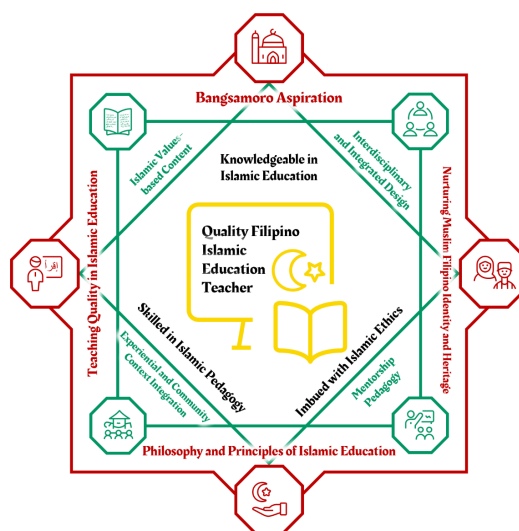
1. certificate/s of attendance in a traditional madrasah (minimum completion of Grades 1–7 or equivalent)
2. certificate/s on relevant Islamic studies preparation and training, or
3. certificate/s from a recognized institution and/or mentor confirming personal studies.

Applicants must also pass an admission assessment covering general knowledge of Islamic Studies and proficiency in Arabic, including reading, reciting, grammar, sentence structure, and writing.

Recommended Experiential Learning Requirement

During pre-service teachers' coursework and internship, the program will allot structured immersion and/or practicum placements in Islamic Education contexts, including ALIVE and ISAL - implementing schools and private integrated madāris. Within the one-year teaching internship, a dedicated period (e.g., selected months) will intentionally situate pre-service teachers in Islamic Education settings to strengthen experiential learning, mentorship-guided practice, and context-sensitive Islamic pedagogy.

4.2 Certificate Program Framework



The Program Framework uses the eight-pointed star—a classical Islamic symbol of balance, justice, and structured knowledge—to represent the Certificate in Islamic Education as an integrated, holistic model of teacher preparation grounded in Bangsamoro and Philippine Islamic education contexts. Visually formed through three-layered squares (outer, middle, inner), the framework shows how the program moves from why the program is needed to how it is designed and ultimately to what it produces. The outer layer presents the curriculum drivers that anchor the certificate—Bangsamoro Aspirations, Philosophy and Principles of Islamic Education, Teaching Quality in Islamic Education, and Nurturing Muslim Filipino Identity and Heritage—while the middle layer highlights the curriculum features that translate these drivers into course design and learning experiences: Islamic values-based content, interdisciplinary and integrated design, experiential and community context integration, and mentorship pedagogy across ALIVE, ISAL in BARMM, and traditional/private madāris. The inner square represents the intended outcomes of the program—pre-service teachers who are knowledgeable in Islamic Education, skilled in Islamic pedagogy, and imbued with Islamic ethics—and at the center, the crescent moon and star with an open book symbolizes the program’s core commitment: developing a Quality Filipino Islamic Education Teacher who embodies balanced learning, peace-oriented education, reflective practice, and responsible stewardship (khalīfa al-ard) in service of holistic development and nation-building.

4.3 Certificate Program Outcomes

**Certificate in Islamic Education
Program Outcomes**

Performance Indicators

1. Demonstrate mastery of foundational knowledge in Islamic education.
 - 1.1 Accurately explains foundational concepts and principles in Islamic Education: Aqidah (Theology), Fiqh (Jurisprudence), Ulum al-Qur'an (Quranic Sciences), Hadith Sciences, Seerah (Prophetic Biography), Akhlaq (Ethics), and Maqasid (objectives of Shariah) in educational contexts.
 - 1.2 Analyzes Islamic texts and resources to derive ethical and educational guidance relevant to contemporary issues faced by Muslim learners (e.g., digital life, environmental ethics, pluralism).
2. Design faith-based, equity-oriented, and context-sensitive instruction that integrates the philosophy and principles of Islamic education to affirm Muslim Filipino identity and heritage.
 - 2.1 Critically analyzes the philosophy and principles of the Islamic Education curriculum to reinforce Muslim Filipino identity and heritage.
 - 2.2 Designs constructively aligned lesson plans and learning sequences informed by the features of Islamic pedagogy.
 - Implements a range of evidence-based, learner-centered instructional strategies anchored on Islamic pedagogy suitable for diverse Islamic Education settings.
 - Resolves classroom dilemmas using professional judgments based on Islamic frameworks.
 - Produces original teaching resources that present Islamic content through innovative pedagogical formats.
3. Apply reflective, peace-oriented, and stewardship-centered mentorship pedagogy through action research and service learning in various Islamic education settings.
4. Exhibit a resilient, agentic professional identity as an Islamic Education teacher, committed to communal responsibility and Islamic ethical standards.
 - 4.1 Integrates in instructional planning and practice the cultural, linguistic, and socio-economic realities of the diverse local Muslim communities.
 - 4.2 Practices professional and ethical standards in the delivery of Islamic Education in various settings (ALIVE, ISAL in BARMM, and traditional/private madāris).

4.4 Sample Certificate Program Mapping

Certificate in Islamic Education Courses	PO1	PO2	PO3	PO4
1. Foundations of Islamic Education	I			I
2. Teaching Arabic Language 1	I	I		
3. Islamic Education in the Qur'an and Sunnah	I			P
4. Teaching Arabic Language 2	P	P		
5. Teaching Islamic Values		P		P
6. Principles and Methods of Teaching in Islamic Education		D	D	

4.5 Certificate Program Course Descriptions

Course Title	Foundations of Islamic Education
Course Credits	3 units
Contact Hours	51-54 hours
Prerequisite/s	

Course Title

Description	This course introduces pre-service teachers to the historical, philosophical, theological, and psychological foundations of Islamic Education, with emphasis on their application in the Philippine context and on the role of the Islamic education teacher as a community-oriented leader. Anchored in Islamic faith, equity- and rights-based principles, cultural sensitivity, and ethical standards, the course develops learners' mastery of foundational Islamic education knowledge and a resilient, agentic professional identity committed to communal responsibility and ethical practice. The course explains the aims of Islamic Education in nurturing a Muslim Filipino identity and heritage while supporting national goals for quality and inclusive education. It explores Islamic perspectives on learner development, learning environments, positive discipline, classroom management, values, and ethics, alongside contemporary educational theories. Pre-service teachers articulate a personal philosophy of teaching, engage in community-oriented practice, and discuss research-based frameworks for teaching and learning. Assessment includes traditional, performance-based, and reflective tasks designed to assess conceptual understanding of Islamic Education.
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Course Credits

Contact Hours

Prerequisite/s

Skill/s

Description

Teaching Arabic Language 1

3 units

51-54 hours

Basic Reading, Speaking, and Writing Skills in /
Basic Qur'an Reciting Skills

This course locates Arabic as a civilizational and liturgical language, introducing pre-service teachers to its history, civilizational influences, and contemporary relevance. It clarifies the varied purposes of Islamic education settings for teaching Arabic and proposes methodologies pertinent to these purposes. The course covers the Arabic language structure and its unique linguistic features; basic principles and guidelines for Qur'an reading and recitation; sightwords, common vocabulary, and civilizational terms; and basic communication templates for everyday situations. The course includes appropriate strategies for teaching Qur'an reading, basic vocabulary acquisition through text and through mundane or everyday contexts, as well as an introductory approach to basic communication skills acquisition. Assessments shall be varied, considering pre-service teachers' conceptual understandings and acquisition of teaching approach skills matching Arabic Language teaching purposes. These shall include traditional, performance-based, and portfolio-based methods. Pre-service teachers are likewise expected to craft and test basic instructional plans matching the varied purposes for Arabic language teaching.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Islamic Education in the Qur'an and Sunnah
3 units
51-54 hours

This course provides an in-depth exploration of the Qur'an and Sunnah, the primary sources of Islamic education, law, and ethics. Pre-service teachers analyze the exegeses (tafasir) and events relating to the descent of the revelations (asbab al-nuzul) of some verses (ayat) or chapters (suwar) of the Holy Qur'an pertaining to Islamic education. The study of Sunnah focuses on the sayings or words (sunnah qawliyyah), actions or deeds (sunnah fi'liyyah), and tacit or implied approvals (sunnah taqririyyah) of the Prophet Muhammad (peace be upon him), emphasizing the significant role of Islamic education in demonstrating behaviors that uphold the dignity of teaching as a profession. Through critical text analysis and dialogic interactions, pre-service teachers demonstrate applications of conceptual and contextual understanding of the Qur'an and Sunnah in Islamic Education. At the end of the course, pre-service teachers identify evidence-informed activities and strategies for culturally and contextually responsive teaching and learning in diverse Islamic Education settings.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Teaching Arabic Language 2

3 units

51-54 hours

Teaching Arabic Language 1

This course builds on foundational Arabic language skills and the competencies acquired from Teaching Arabic Language 1 to deepen pre-service teachers' conceptual understandings of the language, enabling them to develop instructional plans and learning materials to support Arabic Language teaching for varied purposes and contexts. It covers instructional guidelines and corresponding strategies for Qur'an reading and recitation. Pre-service teachers likewise engage with multimedia learning materials and resources, and instructional strategies for advanced vocabulary acquisition; understanding of multiple Arabic texts, such as select Qur'an passages, Hadiths, and other literature; and acquisition of skills in oral and written communication. This enables them to enhance their competencies in instructional planning and teaching of the Arabic Language for varied purposes and contexts. Pre-service teachers are expected to prepare and try out instructional plans that aptly address the varied educational outcomes for Arabic language teaching. Pre-service teachers shall be assessed through traditional, performance-based, and portfolio-based methods.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Teaching Islamic Values

3 units

51-54 hours

This course prepares pre-service teachers to meaningfully integrate Islamic values into teaching and learning across diverse educational settings. Grounded in the principles of tawhīd, akhlāq, and khalīfah, the course promotes the holistic development of the learners' physical, intellectual, spiritual, moral, and socio-emotional dimensions. It builds the capacity of pre-service teachers to design faith-based, inclusive, and context-responsive instruction aligned with the

foundations of Islamic education and professional ethical practice. The course strengthens competence in establishing nurturing, safe, and well-managed learning environments that encourage active learner participation and uphold respectful, non-violent approaches to classroom management. It engages pre-service teachers in designing developmentally appropriate lesson plans and applying varied instructional strategies that address the learners' diverse needs, abilities, interests, and experiences. The course uses traditional, self-evaluation, reflective, peer, and product-based assessments guided by clearly articulated rubrics to support continuous professional growth. The course emphasizes cultivating a reflective, ethical, and socially responsible professional identity among pre-service teachers.

Course Title

Course Credits

Contact Hours

Prerequisite/s

Description

Principles and Methods of Teaching in Islam Education

3 units

51-54 hours

This course covers the principles and pedagogical foundation of teaching Islamic Education. It explores key approaches, methods, and strategies for facilitating effective teaching and learning in Islamic Education, including multigrade pedagogical approaches, responsive to diverse classroom contexts. The course emphasizes learner-centered, values-based, peace-oriented, and culturally responsive pedagogies appropriate for diverse learners in various Islamic education contexts. In this course, Pre-service teachers demonstrate competencies in curriculum unpacking, examining constructive alignment, designing

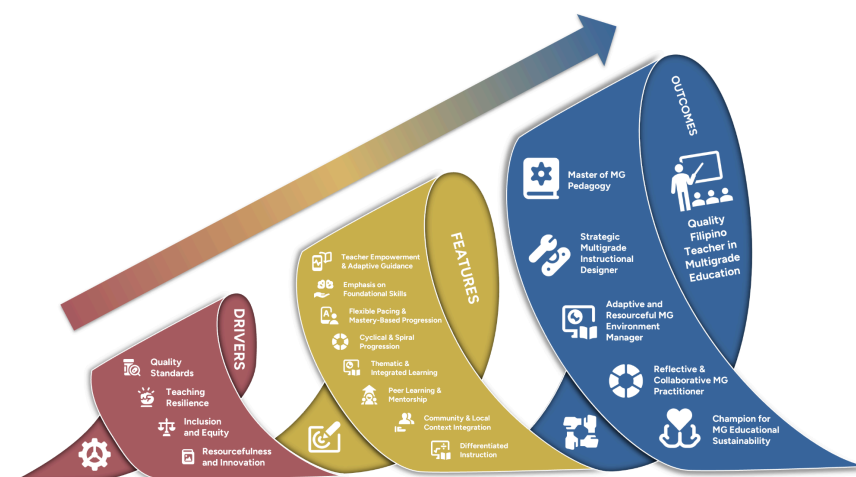
Course Title**Principles and Methods of Teaching in Islam Education**

developmentally sequenced Islamic Education lessons, selecting appropriate teaching methods, and implementing varied assessment strategies. Attention is given to integrating Qur'anic teachings, Hadith, and real-life applications to promote holistic learner development—physical, intellectual, spiritual, moral, and socio-emotional. Through microteaching, action research, and service-learning experiences, pre-service teachers are prepared to become ethical, reflective, and competent educators committed to nurturing Muslim Filipino identity, cultural heritage, and lifelong learning. Assessment practices balance traditional, performance-based, product-oriented, and reflective approaches.

Annex G.5 Certificate in Multigrade Education**5.1 Certificate Program Description**

The Certificate Program in Multigrade Education aims to develop highly competent Filipino multigrade teachers equipped with the knowledge, skills, and dispositions necessary to effectively manage and facilitate meaningful learning in multigrade classrooms. It addresses the unique challenges of teaching multigrade learners through a program focused on differentiated lesson design, pedagogical knowledge, classroom management, essential teacher qualities, and advocacy for sustainable multigrade education. The program integrates theory and practice, combining learner-centered resources, collaborative peer teaching and learning, field experiences (real and/or virtual), workshops, and continuous feedback. Assessment methods emphasize formative and summative tasks, performance-based evaluations, and portfolio development that showcases pre-service teachers' competence. By the end of the program, pre-service teachers are expected to design and implement developmentally appropriate multigrade lessons, apply effective instructional and assessment strategies, manage inclusive learning environments, and demonstrate professionalism, adaptability, and collaboration. Pre-service teachers will also serve as advocates for multigrade education, contributing to the sustainability and improvement of teaching and learning in diverse, resource-limited school contexts.

5.2 Certificate Program Framework



The framework for the Certificate Program in Multigrade Education delineates the essential components for fostering effective multigrade teaching and learning. This is represented in the curled ribbon in Figure 4. The framework is structured into three core areas: Drivers, Features, and Outcomes. The Drivers encompass essential elements considered in the conceptualization of the program in multigrade education. Specifically, the drivers refer to quality standards, teaching resilience, inclusive and equitable education, and resourcefulness & innovation. The Features of multigrade education emphasize teacher agency, flexible learning approaches, integrated instructional methods, and the incorporation of local context in community-centered education. The Outcomes highlight the program's goals for pre-service teachers to support diverse learners in multi-grade settings through the demonstration of: 1. mastery of MG teaching methods; 2. deliberate planning for differentiated instruction; 3. being a manager of the physical space, psychosocial atmosphere, and the usage of limited resources; 4. essential MG teacher qualities; and 5. being a champion for the sustainability of MG education. This comprehensive framework is designed to prepare pre-service teachers to thrive in diverse educational environments. The curled ribbon-shaped framework symbolizes the interconnected nature of multigrade education. Its flowing waves and curves, rendered in three colors, represent the dynamic progression of curriculum drivers, features, and outcomes. This visual metaphor emphasizes the flexibility, adaptability, and innovation at the heart of multigrade education, weaving together its unique complexities.

5.3 Certificate Program Outcomes

Certificate in Multigrade Education Program Outcomes

1. Demonstrate pedagogical knowledge through flexible implementation of evidence-based multigrade instructional and assessment strategies.

Performance Indicators

- 1.1 Critically examine the theoretical foundations, historical context, and best practices in multigrade teaching and learning.
- 1.2 Examine the principles of differentiated instruction and assessment appropriate for multigrade settings.
- 1.3 Employ strategies that foster active learner engagement and participation across grade levels.
- 1.4 Adjust instructional strategies based on assessment data and learner feedback.
- 1.5 Use formative and summative assessments aligned with lesson objectives to effectively support diverse learners and monitor their learning progress.

2. Implement effective, evidence-based classroom management techniques that promote a positive, inclusive, and supportive multigrade learning environment.
 - 2.1 Examine the principles of effective classroom management, specifically designed for multigrade environments.
 - 2.2 Demonstrate effective classroom management strategies in a multigrade setting.
 - 2.3 Facilitate learner-centered experiences that empower multigrade learners to take ownership of their learning.
 - 2.4 Communicate learners' progress and classroom activities to stakeholders in a multigrade setting.
3. Design lessons for multigrade classes that incorporate developmentally appropriate content and learning resources.
 - 3.1 Analyze the principles in lesson design and production of learning resources in multigrade settings.
 - 3.2 Compare and contrast various models in designing multigrade lessons.
 - 3.3 Design cohesive multigrade lessons that align with grade-level standards and objectives.
 - 3.4 Develop MG lessons that apply the principles of lesson integration and differentiation of instruction and assessment.
 - 3.5 Demonstrate efficient use of instructional time in the design of multigrade lessons.
4. Demonstrate qualities essential for effective multigrade teaching, including reflective practice, adaptability, collaboration, and ethical conduct.
 - 4.1 Demonstrate a sustained commitment to empathy, equity, and inclusion to foster a respectful, supportive, and culturally responsive learning environment.
 - 4.2 Commit to continuous professional development through systematic self-reflection, seeking constructive feedback, and the ongoing adaptation of instructional practices to enhance the quality and effectiveness of multigrade educational experiences continuously.
 - 4.3 Manifest a growth mindset to navigate the complexities and challenges inherent in multigrade classrooms.
5. Advocate for multigrade education sustainability by actively mobilizing communities to support learners' holistic development and school success.
 - 5.1 Exhibit positive qualities to advocate for stakeholders' support of a sustainable multigrade education.
 - 5.2 Foster collaborative partnerships to sustain multigrade instruction.

5.4 Sample Certificate Program Mapping

Certificate in Multigrade Education Courses	PO1	PO2	PO3	PO4	PO5
1. Foundations of Multigrade Education	I	I		I	I
2. Multigrade Instructional Approaches	P	P	P	P	P
3. Assessment and Performance Monitoring in Multigrade Classes	P	P	P	P	P
4. Classroom Management and Organization in Multigrade Classes	P	P	P	P	P
5. Design of Multigrade Lesson Plans and Development of Learning Resources	D	D	D	P	I
6. Advocacy and Community Engagement for Multigrade Classes			P	P	P

5.5 Certificate Program Course Descriptions

Course Title

Foundations of Multigrade Education

Course Credits
Contact Hours
Prerequisite/s
Description

3 units
51-54 hours

This course equips pre-service teachers with the theoretical and practical knowledge needed to succeed in multigrade classrooms. It examines the history, philosophy, and teaching methods of multigrade education, focusing on strategies to address the unique challenges of multigrade settings. Key activities include writing analytical essays, participating in group workshops, creating presentations, and analyzing videos to encourage critical thinking, peer collaboration, and practical problem-solving. Constructive feedback from both instructors and peers helps refine teaching practices, deepen theoretical understanding, and encourage reflective teaching. This holistic approach ensures that pre-service teachers have the versatility and confidence to excel in dynamic, diverse classrooms.

Course Title
Course Credits
Contact Hours
Prerequisite/s
Description

Multigrade Instructional Approaches
3 units
51-54 hours

This course equips pre-service teachers with the core principles and practical, evidence-based strategies to design and manage effective instruction in diverse multigrade classrooms. Emphasizing inclusive, learner-centered, and context-responsive teaching, the course explores key instructional approaches, including differentiated instruction, small-group teaching, peer tutoring, and advanced techniques such as cross-age collaboration and managing independent learning stations. Furthermore, students examine innovative methodologies such as project-based, inquiry-based, and cooperative learning specifically tailored to mixed-age settings. The course also addresses critical management components, focusing on effective lesson pacing, activity sequencing, and seamless classroom transitions. Through active lectures, readings, interactive

workshops, group discussions, and microteaching activities, students apply these instructional models to realistic multigrade scenarios. A combination of formative and summative assessments, including reflective journals and performance-based tools, measures their growing competency. Ultimately, pre-service teachers master pedagogical knowledge and successfully apply comprehensive multigrade instructional strategies that effectively engage all learners.

Course Title

Course Credits

Contact Hours

Prerequisite/s

Description

Assessment and Performance Monitoring in Multigrade Classes

3 units

51-54 hours

This course equips pre-service teachers with the knowledge, skills, and appropriate attitudes to design, implement, and interpret effective assessments in multigrade classrooms. It emphasizes how to assess, monitor, and track student progress across grade level combinations, abilities, and learning needs. Topics include the principles of multigrade assessment, key concepts of formative, summative, and diagnostic assessment, performance-based assessments, learner portfolio systems, digital tracking tools (when and where applicable), and rubrics for continuous progress monitoring. It focuses on creating inclusive, differentiated tools that support varying literacy levels, abilities, and learning needs.

The course emphasizes data-driven decision-making, enabling pre-service teachers to analyze assessment results, provide meaningful feedback, and adapt instruction to enhance learner outcomes. These competencies are central to effective multigrade instruction and align directly with the goals of the program. Learning experiences will combine theory and application through lectures, hands-on workshops, group discussions, and peer review sessions. Pre-service teachers will design assessment tools, analyze authentic classroom data, and reflect on case studies that mirror real-world multigrade settings.

The course culminates in a final project, in which pre-service teachers develop a comprehensive assessment plan that integrates tools, performance tracking, feedback, and instructional adaptation, preparing them to support learners effectively in multigrade environments.

Course Title

Course Credits

Contact Hours

Prerequisite/s

Description

**Classroom Management and Organization
in Multigrade Classes**

3 units

51-54 hours

This course prepares pre-service teachers to design and implement effective classroom management and organizational systems specifically tailored to multigrade settings. It focuses on creating structured, inclusive, and engaging learning environments that address the cognitive, social, and emotional needs of multigrade learners. Pre-service teachers will develop strategies for managing space, time, and resources efficiently while fostering a positive classroom climate that promotes collaboration, respect, and a sense of belonging among all learners. Key topics include establishing routines, rules, and expectations; organizing flexible learning spaces; scheduling for multiple grade levels; and implementing behavior management and conflict resolution strategies. The course also emphasizes culturally responsive and motivational approaches that enhance engagement, self-regulation, and student responsibility and agency in multigrade contexts. Through a blend of lectures, hands-on activities, group discussions, practical workshops, and school visits (actual or virtual), pre-service teachers will gain both theoretical knowledge and applied experience. They will design classroom layouts, create behavior management plans,

and analyze real-world scenarios to identify effective management techniques. Formative assessment of learning encompasses reflective journals, scenario-based analyses, classroom design outputs, role-playing and simulation exercises, and collaborative planning tasks. The course culminates in a final project to develop a comprehensive classroom management and organization plan suited to a multigrade environment.

Course Title

Design of Multigrade Lesson Plans and Development of Learning Resources

Course Credits

3 units

Contact Hours

51-54 hours

Prerequisite/s

Description

This course focuses on integrated curriculum design, where pre-service teachers thoroughly examine various integration models, including thematic, project-based, and skill-based approaches. It balances theory and practice, guiding students from curriculum theory to hands-on application through the design of thematic units, lesson planning, and curriculum mapping. Recognizing the unique needs of multigrade settings, pre-service teachers gain direct, practical experience developing innovative, differentiated, flexible, and low-cost learning resources. These materials specifically support independent learning and peer tutoring across grade levels. Through case studies, workshops, and collaborative projects, students design and evaluate integrated learning experiences. Instruction features engaging lectures, interactive group work, rich discussions, and reflective writing, fostering an active, student-centered learning environment. Students receive ongoing feedback from instructors and peers, which refines their skills and deepens their understanding. The course employs both formative and summative assessments, including project-based assignments, presentations, and reflective writing, all designed to demonstrate mastery in creating a truly integrated and resource-rich multigrade learning environment.

Course Title	Advocacy and Community Engagement for Multigrade Classes
Course Credits	3 units
Contact Hours	51-54 hours
Prerequisite/s	
Description	Advocacy and Community Engagement for Multigrade Classes is a professional education course designed to equip pre-service teachers with the knowledge, skills, and ethical dispositions necessary to design and implement community-responsive advocacy initiatives that strengthen multigrade teaching and learning. Anchored in the <i>Reframed</i> Program Outcomes, the course develops competencies in using assessment data to inform evidence-based instructional strategies, establishing inclusive and community-supported classroom management practices, collaborating with parents and stakeholders to develop localized and culturally responsive learning resources, and demonstrating reflective and professional conduct aligned with ethical standards. The course further emphasizes the design of sustainable partnership and advocacy programs that mobilize community support for learners' holistic development and academic success. It is aligned with the Philippine Professional Standards for Teachers (PPST) Beginning Teacher Indicators, particularly Domains 2 (Learning Environment), 5 (Assessment and Reporting), 6 (Community Linkages and Professional Engagement), and 7 (Personal Growth and Professional Development), ensuring that future multigrade teachers are prepared to foster positive school–community relationships and uphold the dignity and integrity of the teaching profession.

Annex G.6 Certificate in Special Needs and Inclusive Education

6.1 Certificate Program Description

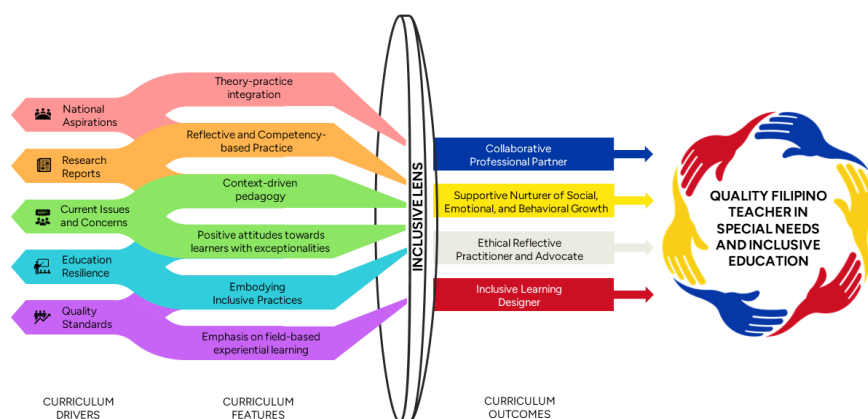
The Certificate in Special Needs and Inclusive Education (SNIEd) is an undergraduate certificate program designed to augment the preparation of pre-service teachers whose primary training is in their content specialization. It strengthens their theoretical and pedagogical competencies in creating inclusive learning environments within general education classrooms. The program supports a shift from basic awareness to the actual enactment of inclusive practices through field-based experiential learning, theory–practice integration, and context-responsive pedagogy.

Anchored in government mandates and global quality standards, the curriculum responds to pressing needs such as education resilience and the shortage of inclusive education practitioners. It emphasizes the demonstration of inclusive strategies, instructional adaptations, and positive behavior support appropriate to diverse learners. Through an inclusive education lens, the program prepares pre-service teachers to become ethical advocates, inclusive

learning designers, and reflective practitioners who serve as supportive nurturers and collaborative partners in general education contexts. Graduates of this certificate program are equipped with foundational competencies to uphold inclusive education principles in their respective subject areas.

Note: Holding a Certificate in SNIEd provides opportunities to do the teaching internship in inclusive schools or schools with special curricular programs.

6.2 Certificate Program Framework



The curriculum framework is structured around three interrelated components—Curriculum Drivers, Curriculum Features, and Curriculum Outcomes—aligned through an Inclusive Education Lens that ensures equity, relevance, and responsiveness in SNIEd. The certificate program is driven by government mandates, national and international policies, directions, research evidence, current issues and concerns, emerging strategies on education resilience, and quality standards, which collectively ground the program in legal, empirical, and professional imperatives. These drivers inform the features that emphasize field-based experiential learning, theory–practice integration, reflective and competency-based practice, context-driven pedagogy, and the development of inclusive attitudes toward learners with exceptionalities. Viewed through the inclusive lens, these features lead to the defined curriculum outcomes that develop pre-service teachers who are ethical advocates, reflective and responsive practitioners, inclusive learning designers, supportive nurturers of learners' holistic development, and collaborative professional partners. The convergence of these elements produces the Quality Filipino Teacher in Special Needs and Inclusive Education, equipped to respond effectively to diverse learners, varied contexts, and the evolving demands of inclusion.

6.3 Certificate Program Outcomes

Certificate in Special Needs and Inclusive Education Program Outcomes

Performance Indicators

1. Ethical Reflective Practitioner and Advocate Adhere to ethical principles, exercise professional accountability, pursue reflective growth consistent with the current professional standards, and advocate for the rights of learners.	1.1 Demonstrate ethical conduct and professional responsibility, including confidentiality, fairness, and respect for diversity. 1.2 Engage in reflective and reflexive practice to improve instructional effectiveness and uphold ethical standards. 1.3 Align educational practice with legal mandates and professional standards, especially those related to inclusive education and learner protection.
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	1.4 Advocate for equity, access, and justice through initiatives supporting learners with exceptionalities and those in marginalized contexts. 1.5 Pursue lifelong learning through participation in professional development activities (e.g., research, conferences, learning communities).
2. Inclusive Learning Designer Design and implement individualized, inclusive, differentiated, and developmentally-appropriate teaching and learning experiences grounded on content mastery and research-based principles.	2.1 Develop learner-centered lesson plans utilizing UDL principles and differentiated strategies. 2.2 Design and adapt instructional materials that are developmentally appropriate, culturally responsive, and accessible. 2.3 Integrate assistive technology and digital tools to enhance participation and remove learning barriers. 2.4 Create safe, inclusive, and respectful learning environments that foster collaboration and belonging. 2.5 Apply research-based and evidence-informed teaching strategies in instructional decision-making. 2.6 Demonstrate deep content mastery by translating complex subject matter into manageable, engaging, and relevant learning experiences.
3. Supportive Nurturer of Social, Emotional, and Behavioral Growth Create and sustain safe, inclusive, and supportive environments that nurture learners' overall growth and development.	3.1 Foster inclusive, safe, and supportive learning environments that honor individual differences. 3.2 Recognize and respond to diverse learner profiles across educational settings. 3.3 Promote psychological safety and community responsiveness through classroom climate design. 3.4 Identify signs of adversity and facilitate appropriate support or referrals. 3.5 Apply proactive, evidence-based classroom behavior management strategies that emphasize positive support. 3.6 Facilitate student engagement and build resilience through meaningful learning experiences.
4. Collaborative Professional Partner Collaborate with families, fellow educators, support service providers, and community partners to support inclusive education and promote holistic learner development.	4.1 Communicate clearly and respectfully to foster collaboration and mutual understanding. 4.2 Engage in collaborative consultation with families, educators, and support service providers to address learner needs. 4.3 Participate in shared decision-making processes to develop inclusive interventions and support plans. 4.4 Coordinate with community partners to strengthen school-home-community linkages for learner development.

6.4 Sample Certificate Program Mapping

Certificate in Special Needs and Inclusive Education Courses	PO1	PO2	PO3	PO4
1. Understanding Learners with Exceptionalities I: Developmental Disabilities				

2. Understanding Learners with Exceptionalities II: Gifted and Talented Learners; Learners with Social, Emotional, and Behavioral Difficulties	I	I	I	I
3. Understanding Learners with Exceptionalities III: Physical and Sensory Impairments	I	I	I	I
4. Curriculum and Innovative Pedagogies for Inclusive Education	P	P	P	P
5. Utilizing Individualized Learning and Support Plans	P	P	P	P
6. Field Experience in Special Needs and Inclusive Education	D	P	P	P

6.5 Certificate Program Course Descriptions

Course Title

Understanding Learners with Exceptionalities I: Learners with Developmental Delays and Disabilities

Course Credits

3 units

Contact Hours

51-54 hours

Prerequisite/s

Description

This course is designed to complement the development of pre-service teachers' competencies in supporting learners with developmental delays and disabilities through the augmentation of their content specialization training with inclusive practices. It provides a comprehensive knowledge of various developmental disabilities, including Autism Spectrum Disorder, Attention-Deficit/Hyperactivity Disorder, Learning Disabilities, and Language and Communication Disorders. The course highlights how pre-service teachers can design and implement inclusive instructional strategies, adaptations, and positive classroom management strategies rooted in the cultivation of safe and supportive learning environments that nurture and inspire learner participation. The course will highlight the principles of Universal Design for Learning (UDL) and differentiated instruction, to plan for accessible and learner-centered instruction. Through teaching and learning activities such as lectures, guided readings, case analyses, collaborative planning tasks, and reflective practice, the pre-service teachers can strengthen their capacity to design differentiated learning experiences related to their content specialization. At the end of the course, pre-service teachers are expected to craft accommodation or adaptation plans for instruction and assessment aligned with their content specialization and the needs of learners with developmental delays and disabilities included in the regular classroom setting.

Course Title

**Understanding Learners with
Exceptionalities II: Gifted and Talented
Learners; Learners with Social, Emotional,
and Behavioral Difficulties**

Course Credits

3 units

Contact Hours

51-54 hours

Prerequisite/s

Description

The course equips pre-service teachers with an understanding of learners with giftedness and talents and learners with social, emotional, and behavioral difficulties. It focuses on the fundamental concepts of giftedness and talents and of social, emotional, and behavioral difficulties. This includes identification of these two groups of learners and their characteristics; likewise, different areas of giftedness and categories and types of gifted learners will be given focus. The course covers internalizing and externalizing behaviors of learners with social, emotional, and behavioral difficulties. Discussions include strategies to nurture gifts and talent like acceleration, enrichment, project-based learning, differentiated instruction, technology-enhanced activities, and research opportunities; and curriculum models in enhancing gifts and talents like Renzulli's Schoolwide Enrichment Model, Gardner's Multiple Intelligence Model, and Gagne's Differentiated Model of Giftedness, among others. The course explores behavior management strategies and approaches to address problem behaviors in the classroom. The pre-service teachers will be engaged in discussions, case analysis, journal article critiques, film reviews, simulation activities, and workshops. At the end of the course, they will write case reports about gifted and talented learners in the inclusive classroom, and will develop a behavior case file, which will include a behavior description and appropriate behavior modification strategies.

Course Title

**Understanding Learners with
Exceptionalities III: Learners with Physical
and Sensory Impairments**

Course Credits

3 units

Contact Hours

51-54 hours

Prerequisite/s

Description

The course introduces preservice teachers to the characteristics, access needs, and educational implications of learners with physical, sensory, and related health impairments. The course builds foundational knowledge on conditions such as orthopedic impairments, cerebral palsy, motor disorders, chronic health conditions, blindness, and deafness or hard-of-hearing, emphasizing how these exceptionalities influence mobility, communication, engagement, and participation in inclusive classrooms. Pre-service teachers examine learners' strengths and support needs to inform curricular adaptations, instructional planning, and inclusive placement decisions. The course highlights principles of accessible and developmentally appropriate instruction, including strategies for adapting lessons, designing multisensory and health-responsive learning activities, and creating barrier-free physical and social environments. Attention is given to assistive technologies, communication supports, and environmental modifications that promote independence, safety, and meaningful participation. The course also underscores the importance of collaboration with families, allied professionals, and community partners in developing coordinated support systems for learners with physical and sensory impairments. Through case studies, guided observations, and reflective tasks, preservice teachers learn to design responsive instructional materials, anticipate access challenges, and cultivate inclusive classroom practices that uphold dignity, equity, and full participation for learners with these exceptionalities.

Course Title**Curriculum and Innovative Pedagogies for Inclusive Education*****Course Credits**

3 units

Contact Hours

51-54 hours

Prerequisite/s**Description**

This course equips pre-service teachers with foundational and applied knowledge of inclusive curriculum design and innovative pedagogical frameworks for General Basic Education. It emphasizes Universal Design for Learning (UDL), Differentiated Instruction (DI), and Multi-Tiered Systems of Support (MTSS) as key approaches to planning, delivering, and assessing instruction for learners with exceptionalities. The course highlights collaborative planning, curriculum mapping, and instructional decision-making aligned with PPST indicators and K to 12 standards. Learning experiences include case-based analysis of inclusive classroom scenarios, UDL-based planning, differentiated lesson design, peer critique, workshops, reflective tasks and field-based microteaching. Pre-service teachers engage in peer critique, collaborative workshops, reflective journaling, and field-based microteaching with structured feedback loops. Assessment is performance-based and practice-oriented, including lesson plan analysis, microteaching demonstrations with feedback, case analysis, classroom environment design, policy critiques, video analysis with reflective commentary, and collaborative advocacy projects. These tasks strengthen theory-to-practice connections and develop professional judgment. By the end of the course, pre-service teachers will be able to analyze and adapt general education curricula, design tiered interventions, and foster inclusive learning environments grounded in evidence-based practice.

Course Title	Utilizing Individualized Learning and Support Plans
Course Credits	3 units
Contact Hours	51-54 hours
Prerequisite/s	
Description	This course equips pre-service teachers with foundational knowledge and practical skills in interpreting and implementing individualized learning and support plans for learners with exceptionalities. It enables them to understand the legal frameworks, diagnostic-prescriptive principles, and collaborative processes that underpin plans, including Individualized Education Plans (IEPs), Programs of Developmentally-Sequenced Priorities (PDSPs), Individual Learning Plans (ILPs), Individualized Family Service Plans (IFSPs), Individual Transition Plans (ITPs), Functional Behavior Assessments (FBAs), Behavior Intervention Plans (BIPs), and other support plans. Pre-service teachers will explore how to interpret assessment data, understand the components and purposes of plans, and apply evidence-based strategies to support diverse learners in inclusive settings. Through case study analyses, plan interpretation exercises, simulated IEP team meetings, and classroom observations, they will develop competencies in translating written plans into actionable classroom practices, implementing behavioral strategies, monitoring learner progress through systematic data collection, and communicating effectively with specialists and families. At the end of the course, pre-service teachers will create an implementation portfolio that features their analysis of individualized plans, evidence of collaborative planning processes, progress monitoring documentation, and reflections on adapting classroom practices to meet the needs of individual learners.

Course Title

Field Experience in Special Needs and Inclusive Education

Course Credits

3 units

Contact Hours

51-54 hours

Prerequisite/s

Description

Field Experience in Special Needs and Inclusive Education is an experiential course that immerses pre-service teachers in diverse inclusive education contexts to develop foundational competencies in working with Learners with disabilities (LWD) and gifted

learners. The course introduces pre-service teachers to the principles and practices of Special Needs and Inclusive Education through guided and systematic observation in SNED centers, Inclusive Learning Resource Centers (ILRCs), regular inclusive classrooms, community-based programs, schools with special curricular programs (SCPs), and other relevant settings, with flexible modalities, including virtual observation, when access is limited. Learning occurs through structured observation tasks, reflective journaling, field notes, mentor-guided discussions, and seminar dialogues that focus on learners' characteristics, learning behaviors, environmental supports, inclusive strategies, and stakeholder roles. Pre-service teachers do not conduct formal teaching but engage in reflective analysis and professional conversations with special education teachers and related professionals to deepen their understanding of inclusive practice across contexts. At the end of the course, pre-service teachers submit a Field Experience Portfolio that provides documented evidence of their observational competence, reflective practice, and inclusive professional dispositions across diverse inclusive education settings.

Annex H
ICT Competency Standards for Teachers % CHED

Annex I
Sample Syllabus Guide and Link to Repository of Syllabus Guides Compendium

Link to the Compendium of Syllabus Guides in the Professional Education: <https://tec.gov.ph/rc-profedc/>

Link to the Compendiums of Syllabus Guides in the BCTEd Program: <https://tec.gov.ph/rc-bcted/>

Link to the Compendium of Syllabus Guides in the Certificate Programs: <https://tec.gov.ph/rc-cp/>

**SYLLABUS GUIDE FOR
TECHNOLOGY FOR TEACHING AND LEARNING IN CAREER
AND TECHNICAL COURSES (WITH EMPHASIS ON NTTC 2)**

Course Credits	3 units (2-unit lecture and 1-unit laborat	Contact Hours	85-90 hours
Prerequisite/s	Competency-based Teaching and Training (with emphasis on NTTC 1)		
Course Description	This course equips pre-service teachers with the knowledge, skills, and competencies to design, develop, utilize, and evaluate technology-based instructional materials tailored to the unique demands of career and technical specializations. It introduces pre-service teachers to foundational concepts of educational technology and progresses to the creation of instructional materials and systems that enhance flexible learning delivery. The course emphasizes the development of printed and multimedia-based learning resources, instructional designs, and innovative e-learning packages using Learning Management Systems (LMS). Pre-service teachers also explore advanced applications such as designing mock-ups and simulators, formulating technology-based strategies, and creating comprehensive learning systems to support diverse learners. It provides opportunities to apply innovative teaching strategies in various delivery modes, including institution-based, community-based, and enterprise-based training. Through hands-on activities, collaborative projects, and field-based experiences, pre-service teachers develop relevant instructional materials and implement technology-driven approaches to teaching and learning. Assignments include creating digital resources, designing technology-integrated lesson plans, and producing innovative systems. By the end of the course, pre-service teachers are prepared to foster inclusive, flexible, and future-ready learning environments that meet the evolving needs of learners in career and technical education.		

Program Outcomes	Course Learning Outcomes	Mapping to the PPST Beginning Teacher Indicators
[PO 1] Demonstrate depth and mastery of career and technical specialization and pedagogy aligned with national and global standards.	[CLO 1] Describe the foundational concepts and principles of educational technology in career and technical education by identifying their applications in flexible learning delivery.	[1.1.1] [1.2.1] [1.3.1]
[PO 2] Analyze educational, socio-cultural, and industrial contexts to address challenges in teaching and learning career and technical courses.	[CLO 1] Describe the foundational concepts and principles of educational technology in career and technical education by identifying their applications in flexible learning delivery.	[2.2.1]

	[CLO 3] Design innovative and inclusive teaching strategies for institution-based, community-based, and enterprise-based delivery modes in career and technical education.	[3.1.1] [3.2.1]
[PO 3] Design and implement innovative, inclusive, and adaptive learning spaces and experiences integrating theory, practice, and technology.	[CLO 2] Develop instructional materials and e-learning packages using appropriate technologies to address specific learning needs in career and technical education.	[4.5.1]
	[CLO 3] Design innovative and inclusive teaching strategies for institution-based, community-based, and enterprise-based delivery modes in career and technical education.	[3.3.1] [3.5.1]
[PO 4] Develop innovative and sustainable teaching-learning solutions that respond to rapid technological and societal changes.	[CLO 2] Develop instructional materials and e-learning packages using appropriate technologies to address specific learning needs in career and technical education.	[4.5.1]
	Design innovative and inclusive teaching strategies for institution-based, community-based, and enterprise-based delivery modes in career and technical education.	[3.3.1] [3.4.1]
	[CLO 4] Evaluate the effectiveness of technology-based instructional materials and systems in creating inclusive and future-ready learning environments for diverse learners.	[5.1.1] [5.5.1]
[PO 5] Engage in continuous personal and professional development that cultivates teacher identity, well-being, resilience, and socio-emotional competence in lifelong, community-rooted learning.	[CLO 4] Evaluate the effectiveness of technology-based instructional materials and systems in creating inclusive and future-ready learning environments for diverse learners.	[7.4.1] [7.5.1]

Suggested Summative Assessment Tasks and Alignment with Course Outcomes

Course Learning Outcomes	Summative Assessment Task	Performance Standard
[CLO 1] Describe the foundational concepts and principles of educational technology in career and technical education by identifying their applications in flexible learning delivery.	Written Report or Concept Paper Pre-service teachers will write a report or concept paper explaining the foundational concepts and principles of educational technology and their applications in flexible learning delivery.	The report or concept paper should clearly define foundational concepts and principles of educational technology and explain at least three concrete examples of its application in flexible learning delivery for career and technical education. The

Course Learning Outcomes	Summative Assessment Task	Performance Standard
[CLO 2] Develop instructional materials and e-learning packages using appropriate technologies to address specific learning needs in career and technical education.	E-Learning Package Development Pre-service teachers will create an e-learning package that includes multimedia-based instructional materials tailored to address specific learning needs	report must demonstrate clarity, coherence, and depth of understanding. The e-learning package must include multimedia elements (e.g., videos, images, interactive activities) and address specific learning needs. It should be well-structured, user-friendly, and aligned with career and technical education objectives. A rubric will be used to evaluate content quality, design, and relevance.
[CLO 3] Evaluate and maintain training facilities, tools, and equipment to ensure their effective use in delivering technology-enhanced instruction while adhering to safety protocols and promoting sustainable practices in career and technical education.	Teaching Strategy Design Portfolio Pre-service teachers will design a portfolio of innovative and inclusive teaching strategies for institution-based, community-based, and enterprise-based delivery modes.	The portfolio must include at least three teaching strategies (one for each delivery mode: institution-based, community-based, enterprise-based). Each strategy should demonstrate inclusivity, innovation, and alignment with learner needs, and include clear steps for implementation. A rubric will evaluate creativity, inclusivity, and practicality.
[CLO 4] Evaluate the effectiveness of technology-based instructional materials and systems in creating inclusive and future-ready learning environments for diverse learners.	Evaluation Report Pre-service teachers will conduct an evaluation of a selected technology-based instructional material or system and submit a detailed report with recommendations for improvement.	The evaluation report must include a clear and systematic analysis of the instructional material or system, using an appropriate evaluation rubric. The report should highlight strengths, weaknesses, and provide at least three actionable recommendations for improvement, focusing on inclusivity and future-readiness.

Note: TEIs can add additional matrices to reflect alignment with their institutional outcomes.

Suggested Learning Plan

Week No.	Instructional Learning Outcomes	Course Content	Teaching and Learning Activities	Assessment Tasks	Teaching and Learning Resources
1	Define educational technology and its	I. Introduction to Educational Technology	Lecture-discussion on educational technology	Concept Map: Create a concept map defining educational	[19] [38] [39] [47]

Week No.	Instructional Learning Outcomes	Course Content	Teaching and Learning Activities	Assessment Tasks	Teaching and Learning Resources
	relevance to career and technical education.	- Definition of educational technology - Overview of its relevance to career and technical education	Group discussion on relevance of technology in career and technical education	technology and its relevance to career and technical education.	Slides on educational technology concepts; articles on the role of technology in education; handouts on educational technology terms
2	Identify key foundational concepts and principles of educational technology.	II. Foundational Concepts and Principles of Educational Technology - Key concepts - Principles of effective technology integration	Brainstorming on foundational concepts Case study analysis of technology integration in education	Short Quiz: Multiple-choice and short-answer questions on foundational concepts and principles of educational technology	[33] [36] [37] [56] [58] Case study materials; lecture slides on foundational concepts and principles of educational technology
3	Explain the role of educational technology in facilitating flexible learning delivery. Provide examples of how educational technology can be applied in career and technical education.	III. Flexible Learning Delivery - Definition and types - Role of technology in flexible learning IV. Applications of Educational Technology - Examples of tools and strategies in career and technical education	Interactive lecture on flexible learning delivery Group activity on identifying examples of flexible learning using technology Group research on and presentation of examples of educational technology applications in career and technical education	Reflection Paper: Write a short paper explaining the role of technology in facilitating flexible learning delivery. Presentation: Group presentation on specific educational technologies used in career and technical education	[31] [48] [49] Videos and articles on flexible learning models; examples of flexible learning programs; internet resources; case studies of educational technology applications

Week No.	Instructional Learning Outcomes	Course Content	Teaching and Learning Activities	Assessment Tasks	Teaching and Learning Resources
4	Identify specific learning needs in career and technical education.	V. Understanding Learning Needs in Career and Technical Education - Identifying diverse learner needs - Learning goals and objectives	Class discussion on identifying learning needs Workshop on analyzing case scenarios to identify specific learning needs	Case Study Identification Task: Identify specific learning needs from given case scenarios.	[6] [27] Handouts on identifying learning needs; sample learner profiles; case scenarios
5	Select appropriate technologies for developing instructional materials and e-learning packages.	VI. Selecting Technologies for Instructional Materials - Criteria for selecting technologies - Types of technologies for e-learning materials	Demonstration of different technologies for e-learning Class activity on evaluating and selecting appropriate technologies for specific scenarios	Technology Selection Report: Submission of a report justifying selection of technologies for specific instructional purposes	[7] [8] [12] [15] [24] [46] [50] [55] [58] Examples of e-learning tools (e.g., Canva, Google Classroom, Moodle); evaluation rubrics for technology selection
6	Create multimedia-based instructional materials using selected technologies.	VII. Creating Multimedia-Based Instructional Materials - Multimedia elements (text, images, audio, video) - Design principles for multimedia	Hands-on workshop on creating multimedia presentations using tools like PowerPoint, Canva, or video editing software	Multimedia Presentation: Create and submit a multimedia-based instructional material addressing a specific learning objective.	[21] [23] [25] [41] [43] [60] Computers and multimedia tools (e.g., Canva, PowerPoint, video editing software); guidelines for multimedia design
7-8	Develop an e-learning package using a Learning Management System (LMS) to address specific learning objectives.	VIII. Developing E-Learning Packages Overview of Learning Management Systems (LMS)	Guided activity on exploring an LMS platform (e.g., Google Classroom, Moodle)	E-Learning Package Submission: Develop and submit a functional e-learning package using an LMS.	[10] [18] [29] [61] LMS platform access (e.g., Google Classroom, Moodle); tutorials on LMS usage

Week No.	Instructional Learning Outcomes	Course Content	Teaching and Learning Activities	Assessment Tasks	Teaching and Learning Resources
9	Analyze the characteristics of institution-based, community-based, and enterprise-based delivery modes in career and technical education.	- Creating content for an LMS IX. Delivery Modes in Career and Technical Education - Institution-based delivery - Community-based delivery - Enterprise-based delivery	Workshop on uploading content and creating an e-learning package Lecture-discussion on delivery modes Group activity on comparing and contrasting different delivery modes	Comparison Matrix: Create a matrix comparing the characteristics of the three delivery modes.	[13] [28] [42] Lecture slides on delivery modes; real-life examples of delivery modes in career and technical education
10	Identify the elements of innovative and inclusive teaching strategies for diverse learning environments.	X. Innovative and Inclusive Teaching Strategies - Characteristics of innovative teaching strategies - Strategies for inclusivity	Class discussion on innovative and inclusive strategies Brainstorming session on the elements of inclusive teaching strategies	Group Report: Identify and explain elements of innovative and inclusive teaching strategies for diverse learning environments.	[16] [26] [53] Articles on inclusive teaching strategies; examples of innovative teaching practices
11	Design inclusive teaching strategies tailored to specific delivery modes and learner needs.	XI. Designing Inclusive Teaching Strategies - Steps in designing teaching strategies - Adapting strategies to learner needs and contexts	Workshop on designing teaching strategies for different delivery modes Peer feedback on designed strategies	Teaching Strategy Portfolio: Design and submit a portfolio of inclusive teaching strategies for different delivery modes.	[11] [30] [34] [35] [45] [54] [57] Templates for teaching strategy design; guidelines for inclusivity in teaching
12	Identify criteria for evaluating the	XII. Evaluation of Technology-Bas	Lecture on evaluation criteria and tools	Evaluation Rubric Development:	[2] [51] [52]

Week No.	Instructional Learning Outcomes	Course Content	Teaching and Learning Activities	Assessment Tasks	Teaching and Learning Resources
13	effectiveness of technology-based instructional materials and systems. Analyze the strengths and weaknesses of selected technology-based instructional materials and systems.	ed Instructional Materials - Criteria for evaluation - Tools for evaluation XIII. Analyzing Instructional Materials - Common strengths and weaknesses - Case studies of technology-based instructional materials	Group activity on developing an evaluation rubric for instructional materials Case study analysis on evaluating real examples of instructional materials Class discussion on findings	Identify and list key criteria for evaluating technology-based instructional materials. Case Study Analysis Report: Submit a report analyzing the strengths and weaknesses of selected instructional materials.	Sample evaluation rubrics; articles on instructional material evaluation [5] [17] [22] [32] [59] Case studies of instructional materials; sample evaluation tools
14	Use an evaluation rubric to assess the inclusivity and future-readiness of technology-based instructional materials and systems.	XIV. Assessing Inclusivity and Future-Readiness Characteristics of inclusive and future-ready instructional materials	Workshop on applying evaluation rubric to selected instructional materials Peer review of evaluations	Evaluation Activity: Use the developed rubric to assess the inclusivity and future-readiness of a given instructional material.	[4] [14] [22] [40] [44] Evaluation rubrics; examples of inclusive and future-ready instructional materials
15	Provide recommendations for improving technology-based instructional materials and systems.	XV. Improving Technology-Based Instructional Materials - Strategies for improvement - Recommendations for inclusivity and future-readiness	Group brainstorming on generating recommendations for improving instructional materials Presentation and peer feedback	Improvement Plan: Submit a detailed improvement plan for a selected technology-based instructional material or system.	[4] [14] [22] [40] [44] [62] Guidelines for improvement plans; examples of improved instructional materials

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