

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNICAL LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL - TECHNICAL-VOCATIONAL-LIVELIHOOD TRACK
INFORMATION AND COMMUNICATIONS TECHNOLOGY – COMPUTER PROGRAMMING

These are the list of specializations and their pre-requisites.

	Specialization	Number of Hours	Pre-requisite
1.	Animal Production (NC II)	480 hours	
2.	Aquaculture (NC II)	320 hours	
3.	Artificial Insemination (Ruminants) (NC II)	160 hours	Animal Production
4.	Artificial Insemination (Swine) (NC II)	160 hours	Animal Production
5.	Crop Production (NC I)	320 hours	
6.	Fish Nursery Operation (NC II)	160 hours	
7.	Fish or Shrimp Grow Out Operation (Non NC)	160 hours	Aquaculture
8.	Fish Wharf Operation (NC I)	160 hours	Fish or Shrimp Grow Out Operation
9.	Food (Fish) Processing (NC II)	640 hours	
10.	Horticulture (NC II)	640 hours	
11.	Landscape Installation and Maintenance (NC II)	320 hours	Crop Production
12.	Organic Agriculture (NC II)	320 hours	Crop Production
13.	Pest Management (NC II)	320 hours	Crop Production
14.	Rice Machinery Operation (NC II)	320 hours	Crop Production
15.	Slaughtering Operation (NC II)	160 hours	Animal Production
1.	Beauty/Nail Care (NC II)	160 hours	40 hours of the subject during exploratory Grade 7/8
2.	Attractions and Theme Parks (NC II)	160 hours	
3.	Bread and Pastry Production (NC II)	160 hours	
4.	Caregiving (NC II)	640 hours	40 hours of the subject during exploratory Grade 7/8
5.	Cookery (NC II)	320 hours	40 hours of the subject during exploratory Grade 7/8
6.	Dressmaking (NC II)	320 hours	
7.	Food and Beverage Services (NC II)	160 hours	
8.	Front Office Services (NC II)	160 hours	40 hours of the subject during exploratory Grade 7/8
9.	Hairdressing (NC II)	320 hours	
10.	Handicraft (Basketry, Macrame) (Non-NC)	160 hours	
11.	Handicraft (Fashion Accessories, Paper Craft) (Non-NC)	160 hours	
12.	Handicraft (Needlecraft) (Non-NC)	160 hours	
13.	Handicraft (Woodcraft, Leathercraft) (Non-NC)	160 hours	
14.	Household Services (NC II)	320 hours	40 hours of the subject during exploratory Grade 7/8
15.	Housekeeping (NC II)	160 hours	
16.	Tailoring (NC II)	320 hours	40 hours of the subject during exploratory Grade 7/8
17.	Tour Guiding Services (NC II)	160 hours	
18.	Tourism Promotion Services (NC II)	160 hours	
19.	Travel Services (NC II)	160 hours	
20.	Wellness Massage (NC II)	160 hours	

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		Specialization	Number of Hours	Pre-requisite
1.	ICT	Computer Hardware Servicing (NC II)	320 hours	
2.		Animation (NC II)	320 hours	
3.		Computer Programming (NC IV)	320 hours	
4.		Contact Center Services (NC II)	320 hours	
5.		Illustration (NC II)	320 hours	
6.		Medical Transcription (NC II)	320 hours	
7.		Technical Drafting (NC II)	320 hours	
1.	INDUSTRIAL ARTS	Automotive Servicing (NC I)	640 hours	
2.		Carpentry (NC II)	640 hours	
3.		Consumer Electronics Servicing (NC II)	640 hours	
4.		Electrical Installation and Maintenance (NC II)	640 hours	
5.		Masonry (NC II)	320 hours	
6.		Plumbing (NC I)	320 hours	
7.		Plumbing (NC II)	320 hours	Plumbing (NC I)
8.		Refrigeration and Airconditioning Servicing (NC II)	640 hours	
9.		Shielded Metal Arc Welding (NC I)	320 hours	
10.		Shielded Metal Arc Welding (NC II)	320 hours	Shielded Metal Arc Welding (NC I)
11.		Tile Setting (NC II)	320 hours	

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(160 hours)

Course Description:

This is a specialization course that leads to a **Computer Programming** National Certificate Level IV (NC IV). It covers Personal Entrepreneurial Competencies (PECs), Environment and Market (EM), five **(5)** Common Competencies, and two **(2)** Core Competencies that a high school student ought to possess, namely: 1) designing program logic, and 2) applying program development approach.

The preliminaries of this specialization course include the following: 1) discussion of the relevance of the course, 2) explanation of key concepts of common competencies, 3) explanation of core competencies relative to the course. and 4) exploration on career opportunities.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
Introduction 1. Relevance of the course 2. Concepts and core competencies in Computer Programming 3. Career opportunities	The learners demonstrate an understanding of key concepts, underlying principles and core competencies in Computer Programming	The learners shall be able to independently create/provide quality and marketable product and/or service in Computer Programming, as prescribed by TESDA Training Regulations	<i>The learners...</i> 1. Discuss the relevance of the course 2. Explain key concepts of common competencies 3. Explain core competencies of Computer Programming 4. Explore job opportunities for Computer Programming as a career	
LESSON 1: PERSONAL ENTREPRENEURIAL COMPETENCIES (PECS)				
1. Assessment of Personal Competencies and Skills (PECs) vis-à-vis a practicing entrepreneur/ employee in locality/town 1.1 Characteristics 1.2 Attributes 1.3 Lifestyle 1.4 Skills 1.5 Traits 2. Analysis of PECs in relation to a practitioner 3. Align, strengthen and develop one's PECs based on the result	The learners demonstrate an understanding of one's PECs in Computer Programming	The learners shall be able to recognize his/her PECs and prepares an activity plan that aligns with that of a practitioner/entrepreneur in Computer Programming	LO 1. Recognize PECs needed in Computer Programming 1.1 Assess one's PECs: characteristics, attributes, lifestyle, skills, and traits 1.2 Assess practitioner's: characteristics, attributes, lifestyle, skills, traits 1.3 Compare one's PECs with that of a practitioner/entrepreneur 1.4 Align one's PECs with that of a practitioner/entrepreneur	TLE_PECs9-12-Ia-1

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
LESSON 2: ENVIRONMENT AND MARKET (EM)				
1. Market (Locality/town) 2. Key concepts of market 3. Players in the market (Competitors) 4. Products and services available in the market	The learners demonstrate an understanding of environment and market in Computer Programming in one's locality/town	The learners shall be able to create a business vicinity map reflective of potential market in Computer Programming in a locality/town	LO 1. Recognize and understand the market in Computer Programming 1.1 Identify the players/competitors within the town 1.2 Identify the different products/services available in the market	TLE_EM9-12-Ia-1
5. Market (Customer) 6. Key concepts of identifying and understanding the consumer 7. Consumer Analysis through: 7.1 Observation 7.2 Interviews 7.3 Focus Group Discussion (FGD) 7.4 Survey			LO 2. Recognize the potential customer/market in Computer Programming 2.1 Identify the profile of potential customers 2.2 Identify the customer's needs and wants through consumer analysis 2.3 Conduct consumer/market analysis	TLE_EM9-12-Ia-2
LESSON 3: USE HAND TOOLS AND EQUIPMENT (UT)				
1. Hand tools in Computer Programming	The learners demonstrate an	The learners shall be able to	LO 1. Prepare hand tools and equipment in Computer	TLE ICTCP9-12UT-Ib-1

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
2. Equipment in Computer Programming	understanding of hand tools and equipment in Computer Programming	independently use hand tools and equipment in Computer Programming	Programming 1.1 List hand tools and equipment based on job requirements 1.2 Identify appropriate hand tools and equipment 1.3 Classify hand tools and equipment according to function and task requirement	
3. Procedure in accomplishing forms: 3.1 Job order slips 3.2 Tools and materials requisition slips 3.3 Borrower's slip 4. Requisition procedures			LO 2. Inspect hand tools and equipment received in Computer Programming 2.1 Check the list of tools and equipment requested per job requirement 2.2 Inspect the requested tools and equipment 2.3 Assess the condition of all hand tools and equipment for proper operation and safety	TLE ICTCP9-12UT-Ic-2
LESSON 4: MAINTAIN HAND TOOLS, EQUIPMENT AND PARAPHERNALIA (MT)				
1. Safety procedures in using hand tools and equipment 2. Procedures in cleaning, 2.1 tightening and simple repairs of hand tools, equipment, and paraphernalia 3. Common malfunction in hand tools, equipment and paraphernalia 4. Reporting to property custodian	The learners demonstrate an understanding of concepts and underlying principles in maintaining hand tools, equipment, and paraphernalia	The learners shall be able to independently perform maintenance of hand tools, equipment, and, paraphernalia	LO 1. Use and maintain hand tools, measuring instrument and equipment 2.1 Perform safety procedures in using hand tools and equipment 2.2 Follow procedures in cleaning, tightening and simple repairing of hand tools, equipment, and paraphernalia 2.3 Identify common malfunctions (unplanned or unusual events) when using tools, equipment, and paraphernalia 2.4 Follow procedures in	TLE ICTCP9-12MT-Id-1

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
			preparing a report to property custodian	
LESSON 5: PERFORM MENSURATION AND CALCULATION (MC)				
1. Measuring instruments /Measuring tools 2. Proper handling of measuring instruments	The learners demonstrate an understanding of concepts and underlying principles in performing measurement and calculation	The learners shall be able to independently perform accurate measurement and calculation based on a given task	LO 1. Select measuring instruments 1.1 Interpret object or component to be measured according to the appropriate regular geometric shape 1.2 Select measuring tools appropriate to the object to be measured based on job requirements 1.3 Obtain correct specification from relevant sources 1.4 Select appropriate measuring instruments according to job requirements 1.4 Use alternative measuring tools without sacrificing cost and quality of work	TLE_ICTCP9-12MC-Ie-1
3. Trade Mathematics/Mensuration 3.1 Four fundamental operations 3.2 Kinds of measurement 3.3 Dimensions 3.4 Ratio and proportion 3.5 Trigonometric functions			LO 2. Carry out mensuration and calculation 2.1 Perform calculation needed to complete task using the four mathematical fundamental operations (addition,	TLE_ICTCP9-12MC-If-2

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
3.6 Algebraic equations 3.7 Fractions, percentage and decimals 3.8 Conversion 4. Numbering Systems 4.1 Decimal 4.2 Binary 4.3 Octal 4.4 Hexadecimal 5. American Standardized Code for Information Interchange (ASCII) table and other data representation tables 6. Arithmetic operations on binary values 7. Numbering systems conversion 7.1 Decimal to any numbering system 7.2 Binary to any numbering system 7.3 Octal to any numbering system 7.4 Hexadecimal to any numbering system 8. Measuring memory and file capacity			subtraction, multiplication and division) 2.2 Employ different techniques in checking for the accuracy of the computation 2.3 Identify the storage capacity of media 2.4 Perform arithmetic computation on different numbering systems 2.5 Identify the machine equivalent values of human-readable characters using ASCII Table 2.6 Measure the storage requirement of a file 2.7 Compute for the storage requirement of files	
LESSON 6: PREPARE AND INTERPRET TECHNICAL DRAWING (ID)				
1. Drawing symbols, signs, and data 2. Trade mathematical conversions	The learners demonstrate an understanding of concepts and underlying principles in preparing and interpreting technical drawings in Computer	The learners shall be able to independently read and interpret technical drawings accurately	LO 1. Analyze signs, symbols, and data 1.1 Prepare tools and instruments used in Computer Programming 1.2 Interpret signs, symbols, and data according to job specifications 1.3 Perform simple trade mathematical conversions	TLE_ICTCP9-12ID-Ig-1

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
	Programming			
3. Basic illustration 4. Technical plans and schematic diagram 5. Symbols and abbreviations			LO 2. Interpret illustration drawings and plans 2.1 Identify illustration tools and materials to be used in preparing a simple illustration 2.2 Identify dimensions and specifications according to job requirements	TLE_ICTCP9-12ID-Ih-2
LESSON 7: PRACTICE OCCUPATIONAL HEALTH AND SAFETY (OHS) PROCEDURE (OS)				
1. Safety procedures 2. Identification of hazards, risks, and control 3. For users and technicians 4. Damage equipment 5. Environment 6. Organizational safety and health protocol 7. OHS indicators	The learners demonstrate an understanding of concepts and underlying principles of Occupational Health and Safety Procedure in relation to health and risk hazards in the workplace	The learners shall be able to independently observe precautionary measures and responds to OHS procedures in the workplace, as prescribed by TESDA Training Regulations	LO 1. Identify hazards and risks 1.1 Follow OHS policies and procedures in identifying hazards and risks 1.2 Explain hazards and risks in the workplace 1.3 Identify hazards and risks indicators as prescribed by the manufacturer 1.4 Apply contingency measures in accordance with the OHS procedures	TLE_ICTCP9-12OS-Ii-1
8. Safety regulations in the workplace 9. Methods of controlling hazards and risks 10. Disaster preparedness and management			LO 2. Evaluate and control hazards and risks 2.1 Determine the effects of hazards in the workplace 2.2 Identify the methods in controlling hazards and risks 2.3 Follow OHS procedures for controlling hazards and risks	TLE_ICTCP9-12OS-Ij-2
11. OHS procedure, practices and regulations 12. Emergency-related drills and training			LO 3. Maintain Occupational Health and Safety 3.1 Observe established procedures in responding to	TLE_ICTCP9-12OS-Ij-3

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
			emergency-related drill 3.2 Fill-up OHS personal records in accordance with workplace requirement	
LESSON 8: DESIGNING PROGRAM LOGIC (PL)				
1. The program design and structure 2. Flowchart symbols 3. Algorithm 4. Pseudo Code 5. Elements of Programming Language 6. Program Control Structure 7. Program constructs/modules/objects	The learners demonstrate an understanding of the concept and underlying principles of designing program logic	The learners shall be able to independently design program logic based on job requirements, as prescribed by the TESDA Training Regulations	LO 1. Select the program logic design approach 1.1 Obtain design documentation 1.2 Identify systems specifications and requirements 1.3 Select the design approach to be followed in coding 1.4 Identify the applicable diagram based on the job requirements 1.5 Identify the required links 1.6 Identify the required modules	TLE_ICTCP9-12PL-IIa-1
8. Coding the Programs 9. Steps/Procedures to document the program 10. Application of documentation tools 11. Printing the programs			LO 2. Document the program logic or design 2.1 Follow project standards in structuring diagrams of program flow and modules 2.2 Document the program scope and limits according to project standards 2.3 Document special routines or procedures according to project standards 2.4 Follow project standards in creating special routines or procedures 2.5 Identify references for tables, files, inputs, outputs, and other program functionalities	TLE_ICTCP9-12PL-IIa-j-2

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
			according to project standards 2.6 Revise references for tables, files, inputs, outputs, and other program functionalities according to project standards 2.7 Use applicable templates	
12. Review the designed program logic flow 13. Coding, Compiling and Debugging 14. Program or design specifications 15. Test and implementation of the program 16. Duties and responsibilities of: 16.1 User/Client 16.2 Systems Analyst 16.3 Systems Designer 16.4 Systems Developer/Programmer 16.5 Quality Assurance Officer 16.6 Database Administrator 16.7 Supervisor 16.8 Document Officer 17. Techniques in gathering feedback/input from appropriate persons			LO 3. Validate the design 3.1 Check program flow for interfaces and compliance to design documentation requirements 3.2 Check states or conditions for interfaces and compliance to design documentation requirements 3.3 Discuss the different duties and responsibilities of persons involved in project development 3.4 Gather feedback/input from appropriate persons as needed	TLE_ICTCP9-12PL-IIIa-j-3
LESSON 9: APPLYING PROGRAM DEVELOPMENT APPROACH (PD)				
1. Concept of Programming Languages 2. Evolution of Programming Languages 3. Integrated Development Environment 4. Graphical User Interface 5. Procedures of Programming 6. Writing Elementary Program	The learners demonstrate an understanding of concepts and underlying principles of applying program development approach	The learners shall be able to independently create a software development plan that applies applicable program development approach, as prescribed by TESDA Training Regulations	LO 1. Determine and select appropriate program development approach 1.1 Select appropriate program development approach 1.2 Determine appropriate program activities based on the job requirements 1.3 Create an initial plan that	TLE_ICTCP9-12PD-IVa-e-1

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
			will guide the program development process	
7. Use of documentation tools: 7.1 Word processing Software 7.2 Visio 7.3 Smart draw 7.4 CASE tools 7.5 Client documentation standards 8. Program specifications and user requirements 9. Programming elements 10. Procedures in writing and developing program 11. Programming constructs/ modules/ objects 12. Naming conventions 13. Resources Required in Programming 14. Managing lessons learned			LO 2. Apply the selected development approach 2.1 Use a documentation tool for program development 2.2 Draw program structure and organization 2.3 Define naming conventions 2.4 Use proper naming conventions 2.5 Document input and output forms 2.6 Document program flow and processes 2.7 Identify resources for coding Identify resources for testing programs 2.8 Check programming activities with the development plan 2.9 Review opportunities for improvement, lessons learned, and possible recommendations for future projects 2.10 Document opportunities for improvement, lessons learned, and possible recommendations for future projects 2.12 Present program deliverables to appropriate person for approval	TLE_ICTCP9-12PD-IVf-j-2

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(160 hours)

Course Description:

This is a specialization course that leads to a **Computer Programming** National Certificate Level IV (NC IV). It covers Personal Entrepreneurial Competencies (PECs), Environment and Market (EM) and **two (2)** core competencies that a high school student ought to possess, namely: 1) applying programming skills in a second language, and 2) applying object-oriented programming language skills.

The preliminaries of this specialization course include the following: 1) discussion of the relevance of the course, 2) explanation of core competencies relative to the course, and 3) exploration of career opportunities.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
Introduction 1. Relevance of the course 2. Core competency in Computer Programming 3. Career opportunities	The learners demonstrate an understanding of underlying principles and core competencies in Computer Programming	The learners shall be able to independently creates/provides quality and marketable product and/or service in Computer Programming as prescribed in the TESDA Training Regulations	<i>The learners...</i> 1. Discuss the relevance of the course 2. Explain the core competencies in Computer Programming 3. Explore job opportunities for Computer Programming as a career	
Lesson 1: PERSONAL ENTREPRENEURIAL COMPETENCIES (PECS)				
1. Assessment of Personal Competencies and Skills (PECs) vis-à-vis a practicing entrepreneur/employee in a province 1.1 Characteristics 1.2 Attributes 1.3 Lifestyle 1.4 Skills 1.5 Traits 2. Analysis of PECs in relation to a practitioner 3. Application of PECs to the chosen business/career	The learners demonstrate an understanding of one's PECs in Computer Programming	The learners shall be able to independently create a plan of action that strengthens/further develops one's PECs in Computer Programming	LO 1. Develop and strengthen PECs needed in Computer Programming 1.1 Identify areas for improvement, development, and growth 1.2 Align one's PECs according to his/her business/career choice 1.3 Create a plan of action that ensures success of his/her business/career choice	TLE_PECs9-12-Ia-1
Lesson 2: ENVIRONMENT AND MARKET (EM)				
1. Product Development 2. Key concepts of developing a product 3. Finding Value 4. Innovation 4.1 Unique Selling Proposition	The learners demonstrate an understanding of environment and market in Computer Programming in one's locality	The learners shall be able to independently create a business vicinity map reflective of potential market in Computer Programming within a province	LO 1. Develop a product/service in Computer Programming 1.1 Identify what is of "Value" to the customer 1.2 Identify the customer to sell	TLE_EM9-12-Ia-1

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
(USP)			to 1.3 Explain what makes a product unique and competitive 1.4 Apply creativity and Innovative techniques to develop marketable product 1.5 Employ a Unique Selling Proposition (USP) to the product/service	
5. Selecting Business Idea 6. Key concepts in Selecting a Business Idea 6.1 Criteria 6.2 Techniques			LO 2. Select a business idea based on the criteria and techniques set 2.1 Enumerate various criteria and steps in selecting a business idea 2.2 Apply the criteria/steps in selecting a viable business idea 2.3 Determine a business idea based on the criteria/techniques set	TLE_EM9-12-Ia-2
7. Branding			LO 3. Develop a brand for the product 3.1 Identify the benefits of having a good brand 3.2 Enumerate recognizable brands in the town/province 3.3 Enumerate the criteria for developing a brand 3.4 Generate a clear and appealing product brand	TLE_EM9-12-Ib-3

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
LESSON 3: APPLYING PROGRAMMING SKILLS IN A SECOND LANGUAGE (PS)				
1. Semantics and Syntax 2. Elements of Programming 3. Program Control Structure	The learners demonstrate an understanding of basic concepts, and underlying principles in programming in a second language	The learners shall be able to independently create/provide a quality and marketable product and/or service in programming in a second language, as prescribed by TESDA Training Regulations	LO 1. Apply basic language syntax and layout 1.1 Follow basic language syntax rules and best practices in program coding 1.2 Use language-data types, operators, and expressions 1.3 Use the appropriate language syntax for sequence, selection, and iteration constructs	TLE_ICTCP9-12PS-Ic-j-1
4. Algorithm 5. Pseudocodes 6. Arrays 7. Binary files 8. Modular Programming 9. Structured Query Language 9.1.1. (SQL) and other language facilities 10. Basic Programming Constructs 10.1. Iteration or repetition 10.2 Decision or choice 10.3 Sequence 11. Updating content of a one-dimensional array: 11.1. sequential search 11.2. insertion 11.3. deletion			LO 2. Code using standard algorithms 2.1 Use basic programming-constructs algorithms 2.2 Use modular programming approach 2.3 Perform sequential search, insertion, and deletion algorithms to operate on one-dimensional array 2.4 Code standard sequential access algorithms for text and binary files 2.5 Use standard sequential access algorithms for text and binary files 2.6 Use SQL or language facilities to access databases	TLE_ICTCP9-12PS-IIa-b-2
12. Testing techniques 13. Errors Handling 14. Debugging options 15. Procedures in debugging and editing the program 16. Compiling the program 17. Run the application or program			LO3. Debug code 3.1 Review codes visually 3.2 Review codes by using debugging tools provided by the system or the industry 3.3 Use a debugger to trace code execution	TLE_ICTCP9-12PS-IIc-3

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
			3.4 Examine variable contents to detect and correct errors	
18. Coding Standards 18.1. Java Coding Standards 18.2. GNU Coding Standards 18.3. Client Coding Standards 18.4. Hungarian Notation 19. Documentation techniques 20. Program and documentation standards 21. Internal documentation techniques			LO 4. Document activities 4.1 Follow guidelines for developing a maintainable code that adheres to a set of coding standards 4.2 Follow internal documentation standards and tools 4.3 Use internal documentation standards and tools	TLE_ICTCP9-12PS-IIId-f-4
22. Testing techniques 23. Program and documentation standard 24. Users Manual 25. Printing documents of the programs			LO 5. Test code 5.1 Develop simple tests to confirm that the coding process meets design specifications 5.2 Conduct simple tests to confirm that the coding process meets design specifications 5.3 Document the tests performed 5.4 Correct errors in the code 5.5 Document modifications in the code	TLE_ICTCP9-12PS-IIId-j-5
LESSON 4: APPLYING OBJECT-ORIENTED PROGRAMMING LANGUAGE SKILLS (OP)				
1. Semantics and Syntax 2. Language Operators 3. Elements of Programming 4. Program Control Structure 5. Modular programming 6. Arrays	The learners demonstrate an understanding of concepts and underlying principles in object-oriented programming language	The learners shall be able to independently create/provide quality and marketable product and/or service in object-oriented programming language, as prescribed by TESDA Training Regulation.	LO 1. Apply basic language syntax and layout 1.1 Follow basic language syntax rules and best practices in program coding 1.2 Use language-data types, operators, and expressions 1.3 Use the appropriate language syntax for sequence, selection, and iteration constructs 1.4 Use the appropriate	TLE_ICTCP9-12OP-IIIda-e-1

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
			language syntax for iteration constructs 1.5 Use modular programming approach 1.6 Create arrays and arrays of objects	
7. Principles of object-oriented programming language 8. Encapsulation 9. Inheritance 10. Polymorphism 11. Form, Module, Class, and Objects			LO 2. Apply basic object oriented principles in the target language 2.1 Construct a class that contains primitive member/instance variables 2.2 Construct a class that contains multiple options for object construction 2.3 Use a user-defined aggregation in a class 2.4 Implement inheritance to at least two (2) levels of depth 2.5 Use polymorphism at a simple level through inheritance to enable easy code extension	TLE ICTCP9-12OP-IIIIf-g-2
12. Integrated Development Environments (IDEs): 12.1. Visual C++ 12.2. Visual Studio Suite 12.3. Eclipse 12.4. J-Edit 12.5. Code Warrior 12.6. JBuilder 13. Errors Handling 14. Debugging options 15. Procedures in debugging and editing the program 16. Compiling the program 17. Run the application or program			LO 3. Debug code 3.1 Use an Integrated Development Environments 3.2 Use language debugging facilities of any IDE in debugging 3.3 Detect errors using an applicable program debugging technique 3.4 Resolve errors using an applicable program debugging technique	TLE ICTCP9-12OP-IIIf-h-j-3
18. Documentation techniques 19. Program and documentation			LO 4. Document activities 4.1 Follow guidelines for	TLE ICTCP9-12OP-IVa-e-4

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNICAL LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL - TECHNICAL-VOCATIONAL-LIVELIHOOD TRACK
INFORMATION AND COMMUNICATIONS TECHNOLOGY – COMPUTER PROGRAMMING

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
standards 20. Internal documentation techniques			developing maintainable code that adheres to a set of coding standards 4.2 Follow internal documentation standards 4.3 Use internal documentation standards	
21. Testing techniques 22. Program and documentation standard 23. Users Manual 24. Printing documents of the programs			LO 5. Test code 5.1 Develop simple tests to confirm that the coding process meets design specification 5.2 Conduct simple tests to confirm that the coding process meets design specification 5.3 Document the performed tests 5.4 Apply necessary corrections to the code and documentation	TLE_ICTCP9-12OP-IVf-j-5

**K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNICAL LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL - TECHNICAL-VOCATIONAL-LIVELIHOOD TRACK
INFORMATION AND COMMUNICATIONS TECHNOLOGY – COMPUTER PROGRAMMING
GLOSSARY**

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNICAL LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL - TECHNICAL-VOCATIONAL-LIVELIHOOD TRACK
INFORMATION AND COMMUNICATIONS TECHNOLOGY – COMPUTER PROGRAMMING

Code Book Legend

Sample: TLE_ICTCP9-12OP-IVf-j-5

LEGEND		SAMPLE		DOMAIN/ COMPONENT	CODE
First Entry	Learning Area and Strand/ Subject or Specialization	Technology and Livelihood Education_ Information and Communications Technology Computer Programming	TLE_ ICT CP 9-12	Personal Entrepreneurial Competencies	PECS
	Grade Level	Grade 9/10/11/12		Environment and Market	EM
Uppercase Letter/s	Domain/Content/ Component/ Topic	Applying Object-Oriented Programming Language Skills	OP	Use of Hand Tools and Equipment	UT
				Maintain Hand Tools, Equipment, and Paraphernalia	MT
			-	Perform Mensuration and Calculation	MC
Roman Numeral <i>*Zero if no specific quarter</i>	Quarter	Fourth Quarter	IV	Prepare and Interpret Technical Drawing	ID
Lowercase Letter/s <i>*Put a hyphen (-) in between letters to indicate more than a specific week</i>	Week	Week Six to Ten	f-j	Practice Occupational Health and Safety Procedures	OS
			-	Designing Program Logic	PL
Arabic Number	Competency	Test Code	5	Applying Program Development Approach	PD
				Applying Programming Skills In A Second Language	PS
				Applying Object-Oriented Programming Language Skills	OP

Technology-Livelihood Education and Technical-Vocational Track specializations may be taken between Grades 9 to 12.

Schools may offer specializations from the four strands as long as the minimum number of hours for each specialization is met.

Please refer to the sample Curriculum Map on the next page for the number of semesters per ICT specialization and those that have pre-requisites. Curriculum Maps may be modified according to specializations offered by a school.

SAMPLE ICT CURRICULUM MAP

No.	Grade 7/8	Grade 9	Grade 10	Grade 11	Grade 12
1	<div style="border: 1px dashed black; height: 100px; width: 100%; position: relative;"> <div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%); font-weight: bold;">EXPLORATORY</div> </div>	Computer Hardware Servicing (NC II)	4 sems		
2		Illustration (NC II)	4 sems		
3		Technical Drafting (NC II)	4 sems		
4		Contact Center Services (NC II)	4 sems		
5				Animation (NC II)	4 sems
6				Medical Transcription (NC II)	4 sems
7				Computer Programming (NC IV)	4 sems