**K TO 12 BASIC EDUCATION CURRICULUM**
**JUNIOR HIGH SCHOOL TECHNOLOGY AND LIVELIHOOD TRACK AND SENIOR HIGH SCHOOL – TECHNICAL-VOCATIONAL LIVELIHOOD TRACK**
**INFORMATION AND COMMUNICATIONS TECHNOLOGY – BROADBAND INSTALLATION (FIXED WIRELESS SYSTEMS) NC II**
(160 hours)

These are the specializations and their pre-requisites.  These lists should be used as reference for curriculum maps.

## AGRI-FISHERY ARTS

| | Specialization | Number of Hours | Pre-requisite |
|---|---|---|---|
| 1. | Agricultural Crops Production (NC I) | | |
| 2. | Agricultural Crops Production (NC II)[++] | 480 hours | |
| 3. | Agricultural Crops Production (NC III) | 640 hours | Agricultural Crops Production (NC II) |
| 4. | Animal Health Care Management (NC III) | 320 hours | Animal Production (NC II) |
| 5. | Animal Production (NC II) [+] <br> *When updated, this CG will become the following:* <br> *1.  Animal Production (Poultry-Chicken) (NC II);* <br> *2.  Animal Production (Ruminants) (NC II); and* <br> *3.  Animal Production (Swine) (NC II)* | 480 hours | |
| 6. | Aquaculture (NC II) | 640 hours | |
| 7. | Artificial Insemination (Ruminants) (NC II) | 160 hours | Animal Production (NC II) |
| 8. | Artificial Insemination (Swine) (NC II) | 160 hours | Animal Production (NC II) |
| 9. | Agricultural Crops Production (NC I) | 320 hours | |
| 10. | Fish Capture (NC II) [++] | 640 hours | |
| 11. | Fishing Gear Repair and Maintenance (NC III) | 320 hours | |
| 12. | Fish-Products Packaging (NC II) | 320 hours | |
| 13. | Fish Wharf Operation (NC I) | 160 hours | |
| 14. | Food (Fish) Processing (NC II) | 640 hours | |
| 15. | Horticulture (NC II) [+] | 640 hours | |
| 16. | Horticulture (NC III) | 640 hours | Horticulture (NC II) |
| 17. | Landscape Installation and Maintenance (NC II) | 320 hours | Agricultural Crops Production (NC I) |
| 18. | Organic Agriculture (NC II) | 320 hours | Agricultural Crops Production (NC I) |
| 19. | Pest Management (NC II) | 320 hours | Agricultural Crops Production (NC I) |
| 20. | Rice Machinery Operation (NC II) | 320 hours | Agricultural Crops Production (NC I) |
| 21. | Rubber Processing (NC II) | 320 hours | |
| 22. | Rubber Production (NC II) | 320 hours | |
| 23. | Slaughtering Operation (NC II) | 160 hours | Animal Production (NC II) |

[+]CG to be updated by December 2015
[++]CG to be uploaded by December 2015

## HOME ECONOMICS

| | Specialization | Number of Hours | Pre-requisite |
|---|---|---|---|
| 1. | Attractions and Theme Parks (NC II) | 160 hours | |
| 2. | Barbering (NC II) | 320 hours | |
| 3. | Bartending (NC II) | 320 hours | |
| 4. | Beauty/Nail Care (NC II) | 160 hours | 40 hours of the subject during exploratory Grade 7/8 |
| 5. | Bread and Pastry Production (NC II) | 160 hours | |
| 6. | Caregiving (NC II) | 640 hours | 40 hours of the subject during exploratory Grade 7/8 |
| 7. | Commercial Cooking (NC III) | 320 hours | Cookery (NC II) |
| 8. | Cookery (NC II) | 320 hours | 40 hours of the subject during exploratory Grade 7/8 |
| 9. | Dressmaking (NC II) | 320 hours | 40 hours of the subject during exploratory Grade 7/8 |
| 10. | Events Management Services (NC III) | 320 hours | |
| 11. | Fashion Design (Apparel) (NC III) | 640 hours | Dressmaking (NC II) or Tailoring (NC II) |
| 12. | Food and Beverage Services (NC II) [+] | 160 hours | |
| 13. | Front Office Services (NC II) | 160 hours | 40 hours of the subject during exploratory Grade 7/8 |
| 14. | Hairdressing (NC II) | 320 hours | |
| 15. | Hairdressing (NC III) | 640 hours | Hairdressing (NC II) |
| 16. | Handicraft (Basketry, Macrame) (Non-NC) | 160 hours | |
| 17. | Handicraft (Fashion Accessories, Paper Craft) (Non-NC) | 160 hours | |
| 18. | Handicraft (Needlecraft) (Non-NC) | 160 hours | |
| 19. | Handicraft (Woodcraft, Leathercraft) (Non-NC) | 160 hours | |
| 20. | Housekeeping (NC II) [+] | 160 hours | |
| 21. | Local Guiding Services (NC II) | 160 hours | |
| 22. | Tailoring (NC II) | 320 hours | 40 hours of the subject during exploratory Grade 7/8 |
| 23. | Tourism Promotion Services (NC II) | 160 hours | |
| 24. | Travel Services (NC II) | 160 hours | |
| 25. | Wellness Massage (NC II) | 160 hours | |

[+]CG to be updated by December 2015

## INDUSTRIAL ARTS

| | Specialization | Number of Hours | Pre-requisite |
|---|---|---|---|
| 1. | Automotive Servicing (NC I) [+] | 640 hours | |
| 2. | Automotive Servicing (NC II) | 640 hours | Automotive Servicing (NC I) |
| 3. | Carpentry (NC II) | 640 hours | |
| 4. | Carpentry (NC III) | 320 hours | Carpentry (NC II) |
| 5. | Construction Painting (NC II) | 160 hours | |
| 6. | Consumer Electronics Servicing (NC II) [+] | 640 hours | |
| 7. | Domestic Refrigeration and Airconditioning (DOMRAC) Servicing (NC II) | 640 hours | |
| 8. | Driving (NC II) | 160 hours | |
| 9. | Electrical Installation and Maintenance (NC II) | 640 hours | |
| 10. | Electric Power Distribution Line Construction (NC II) | 320 hours | Electrical Installation and Maintenance (NC II) |
| 11. | Electronic Products Assembly and Servicing (NC II) [++] *(CG under construction based on Consumer Electronics Servicing (NC II) CG)* | 640 hours | |
| 12. | Furniture Making (Finishing) (NC II) [+] | 480 hours | |
| 13. | Instrumentation and Control Servicing (NC II) | 320 hours | Electronic Products Assembly and Servicing (EPAS) (NC II) |
| 14. | Gas Metal Arc Welding (GMAW) (NC II) | 320 hours | Shielded Metal Arc Welding (SMAW) (NC II) |
| 15. | Gas Tungsten Arc Welding (GTAW) (NC II) | 320 hours | Shielded Metal Arc Welding (GMAW) (NC II) |
| 16. | Machining (NC I) [++] | 640 hours | |
| 17. | Machining (NC II) | 640 hours | Machining (NC I) |
| 18. | Masonry (NC II) | 320 hours | |
| 19. | Mechatronics Servicing (NC II) | 320 hours | Consumer Electronics Servicing (NC II) |
| 20. | Motorcycle/Small Engine Servicing (NC II) | 320 hours | |
| 21. | Plumbing (NC I) | 320 hours | |
| 22. | Plumbing (NC II) | 320 hours | Plumbing (NC I) |
| 23. | Refrigeration and Air-Conditioning (Packaged Air-Conditioning Unit [PACU]/Commercial Refrigeration Equipment [CRE]) Servicing (NC III) | 640 hours | Domestic Refrigeration and Airconditioning (DOMRAC) Servicing (NC II) |
| 24. | Shielded Metal Arc Welding (NC I) | 320 hours | |
| 25. | Shielded Metal Arc Welding (NC II) | 320 hours | Shielded Metal Arc Welding (NC I) |
| 26. | Tile Setting (NC II) | 320 hours | |
| 27. | Transmission Line Installation and Maintenance (NC II) | 640 hours | Electrical Installation and Maintenance (NC II) |

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## INFORMATION, COMMUNICATIONS AND TECHNOLOGY (ICT)

| | Specialization | Number of Hours | Pre-requisite |
|---|---|---|---|
| 1. | Animation (NC II) | 320 hours | |
| 2. | Broadband Installation (Fixed Wireless Systems) (NC II) | 160 hours | 1. Telecom OSP and Subscriber Line Installation (Copper Cable/POTS and DSL) (NC II) <br> 2. Telecom OSP Installation (Fiber Optic Cable) (NC II) |
| 3. | Computer Hardware Servicing (NC II) [+] | 320 hours | |
| 4. | Computer Programming (NC IV) [+] <br> *When updated, this CG will become the following:* <br> *1. Programming (.net Technology) (NC II)[++]* <br> *2. Programming (Java) (NC II)[++]* <br> *3. Programming (Oracle Database) (NC II)[++]* | 320 hours | |
| 5. | Computer System Servicing (NC II) [++] <br> *(CG under construction based on Computer Hardware Servicing (NC II) CG)* | 320 hours | |
| 6. | Contact Center Services (NC II) | 320 hours | |
| 7. | Illustration (NC II) | 320 hours | |
| 8. | Medical Transcription (NC II) | 320 hours | |
| 9. | Technical Drafting (NC II) | 320 hours | |
| 10. | Telecom OSP and Subscriber Line Installation (Copper Cable/POTS and DSL) (NC II) | 320 hours | Computer Hardware Servicing (NC II) |
| 11. | Telecom OSP Installation (Fiber Optic Cable) (NC II) | 160 hours | Telecom OSP and Subscriber Line Installation (Copper Cable/POTS and DSL) (NC II) |

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# K TO 12 BASIC EDUCATION CURRICULUM
## JUNIOR HIGH SCHOOL TECHNOLOGY AND LIVELIHOOD TRACK AND SENIOR HIGH SCHOOL – TECHNICAL-VOCATIONAL LIVELIHOOD TRACK
## INFORMATION AND COMMUNICATIONS TECHNOLOGY – BROADBAND INSTALLATION (FIXED WIRELESS SYSTEMS) NC II
(160 hours)

Prerequisites:  1) Telecom OSP and Subscriber Line
Installation (Copper Cable/POTS and DSL) NC II
2) Telecom OSP Installation (Fiber Optic Cable) NC II

**Course Description:**
This curriculum guide is designed to develop and enhance the knowledge, skills, and attitudes ought to possess by a student as fixed wireless broadband installer, in accordance with industry standards. It covers the core competencies such as installing mast and accessories, laying-out of cables, installing and configuring the CPE, and rendering service excellence to customers.

| CONTENT | CONTENT STANDARD | PERFORMANCE STANDARD | LEARNING COMPETENCIES | CODE |
|---|---|---|---|---|
| **Introduction**<br>1. Relevance of the course<br>2. Advanced concepts in Broadband Installation (Fixed Wireless Systems) NC II<br>3. Career opportunities | The learner demonstrates understanding basic concepts and underlying theories of Broadband Installation (Fixed Wireless Systems). | The learner independently demonstrates common competencies in Broadband Installation (Fixed Wireless Systems) as prescribed by TESDA Training Regulations. | 1. Discuss the relevance of the course.<br>2. Explain advanced concepts in Broadband Installation (Fixed Wireless Systems).<br>3. Explore opportunities in Broadband Installation (Fixed Wireless Systems) as a career. | |
| **PERSONAL ENTREPRENEURIAL COMPETENCIES AND SKILLS (PECS)** | | | | |
| 1. Assessment of Personal Entrepreneurial Competencies and Skills (PECS) vis-à-vis a practicing entrepreneur/ employee's<br>  1.1 Characteristics<br>  1.2 Attributes<br>  1.3 Lifestyle<br>  1.4 Skills<br>  1.5 Traits<br>2. Analysis of PECS in relation to a practitioner | The learner demonstrates understanding of one's PECS in relation to Broadband Installation (Fixed Wireless Systems). | The learner recognizes his/her PECS and prepares an activity plan that aligns with the PECS of a practitioner/entrepreneur's in Broadband Installation (Fixed Wireless Systems). | **LO 1. Recognize PECS needed in Broadband Installation (Fixed Wireless Systems)**<br>1.1 Assess one's PECS: characteristics, attributes, lifestyle, skills, and traits<br>1.2 Assess practitioner's PECS: characteristics, attributes, lifestyle, skills, and traits<br>1.3 Compare one's PECS with that of a practitioner/ entrepreneur's<br>1.4 Align one's PECS with those of a practitioner/entrepreneur's | **TLE_PECS9-12-00-1** |

| CONTENT | CONTENT STANDARD | PERFORMANCE STANDARD | LEARNING COMPETENCIES | CODE |
|---|---|---|---|---|
| **ENVIRONMENT AND MARKET (EM)** | | | | |
| 1. Key concepts of Environment and Market<br>2. Products and services available in the market<br>3. Differentiation of products and services<br>4. Customers and their buying habits<br>5. Competition in the market<br>6. SWOT Analysis | The learner demonstrates understanding of the concepts of environment and market that relate with a career choice in Broadband Installation (Fixed Wireless Systems). | The learner independently generates a business idea based on the analysis of environment and market in Broadband Installation (Fixed Wireless Systems). | **LO 1. Generate a business idea that relates with a career choice in Broadband Installation (Fixed Wireless Systems).**<br>1.1 Conduct SWOT analysis.<br>1.2 Identify the different products/services available in the market.<br>1.3 Compare different products/services in computer hardware servicing business.<br>1.4 Determine the profile potential customers.<br>1.5 Determine the profile potential competitors.<br>1.5 Generate potential business idea based on the SWOT analysis. | **TLE_EM9-12-00-1** |
| **CORE COMPETENCIES** | | | | |
| **LESSON 1: INSTALLING MAST AND ACCESSORIES (IMA)** | | | | |
| • Work safety requirements and practices under OSHS<br>• Fundamentals of communication system<br> - Frequency Spectrum and bandwidth<br> - Wireless Broadband Technology<br>• Components for broadband installation<br>• Tools, materials and equipments for broadband installation<br>• OSHS for wireless broadband installation<br>• PPE required for wireless broadband installation | The learner demonstrates an understanding of the principles and concepts in Installing mast and accessories. | The learner independently demonstrates the installation of mast and accessories. | **LO 1. Prepare for mast installation.**<br>1.1 Explain theories and concepts in communication systems.<br>1.2 Describe and discuss theories and concepts of wireless broadband technology.<br>1.3 Distinguish and practice OSHS for wireless broadband installation.<br>1.4 Choose and employ required PPE for wireless broadband installation.<br>1.5 Identify the different components used in broadband installation.<br>1.6 Identify the tools, materials and equipments used in broadband installation. | **TLE_ICTBFW9-12IMA-Ia-b-1** |

| CONTENT | CONTENT STANDARD | PERFORMANCE STANDARD | LEARNING COMPETENCIES | CODE |
|---|---|---|---|---|
| • Effective communication skills<br>• Interpret signs and symbols<br>• Work signs, symbols and conventions<br>• Work instructions and procedures<br>  - Job specifications<br>  - Requisitions procedures<br>  - TELCO Installation SOP's | | | **LO 2. Read and interpret work instructions as per plan.**<br>2.1  Define communication skills to interpret work instructions<br>2.2  Define and explain work signs, symbols and conventions according to the set instructions.<br>2.3  Demonstrate communication skills to interpret work instructions according to established procedures. | **TLE_ICTBFW9-12IMA-Ic-d-2** |
| • Requisition procedure of tools, equipment and materials in installing mast and accessories<br>• Procedure in checking and adjusting of tools and equipment according to manufacturer's specifications<br>• Installation procedure of structures and devices on mast<br>  - Types and size<br>  - Types of Installation<br>  - Accessories<br>• Interpretation of plans and symbols<br>• Installation of mast and accessories<br>• Guy installation procedures and tensioning<br>• Desirable work values and attitudes (cost conscious, safety conscious, quality conscious, etc.)<br>• Communicating effectively/ Protocol on referrals<br>• Installation documentation and report | | | **LO 3. Install mast and accessories.**<br>3.1  Obtain tools, equipment and materials for the installation.<br>3.2  Check and adjust tools to manufacturer's specifications and equipment in good working order.<br>3.3  Install securely structures and devices on mast in accordance with company's specifications.<br>3.4  Install and tension guy-wire assembly to required specifications.<br>3.5  Place identifier marks on installed mast for identification.<br>3.6  Refer problems encountered to appropriate personnel as per standard operating procedures (SOP).<br>3.7  Report/document Installation and design amendments in accordance with job requirements. | **TLE_ICTBFW9-12IMA-Ie-g-3** |

| CONTENT | CONTENT STANDARD | PERFORMANCE STANDARD | LEARNING COMPETENCIES | CODE |
|---|---|---|---|---|
| • Application of 5S<br>• Hazard and risk assessment mechanisms<br>• Protocol in responding to unplanned conditions<br>• Inspection procedures for mast and accessories<br>• Inspection documentation and report | | | **LO 4. Conduct final inspection of the installed mast and accessories.**<br>4.1 Follow installation according to established procedures.<br>4.2 Respond to unplanned events or conditions in accordance with established procedures.<br>4.3 Undertake final inspections to ensure that the installation conforms with technical requirements.<br>4.4 Clean and clear work site of all debris and left made in accordance with the company requirements.<br>4.5 Report on job accomplishment of mast and accessories. | **TLE_ICTBFW9-12IMA-Ih-j-4** |
| **LESSON 2: LAYOUTING AND INSTALLING CABLES (LOI)** | | | | |
| • (Discussed in Module 1)<br>• Testing operation procedures in devices and instruments<br>• Tools and equipment's for cable layout and installation | The learner demonstrates an understanding of principles and concepts in installing and laying out cables. | The learner independently demonstrates the installation and laying out of cables. | **LO 1. Prepare for cable lay out and installation.**<br>1.1 Prepare tools, equipments, materials and personal protective equipment (PPE) needed for installation according to the work instructions and requirements.<br>1.2 Set up installation equipment in accordance with company and job requirements.<br>1.3 Demonstrate the use of tools and equipment according to their uses and functions.<br>1.4 Demonstrate the testing operation of devices and instruments according to instruction manual. | **TLE_ICTBFW9-12LOI-IIa-d-5** |

| CONTENT | CONTENT STANDARD | PERFORMANCE STANDARD | LEARNING COMPETENCIES | CODE |
|---|---|---|---|---|
| • Installation requirements and constraints<br>• Cable types<br>• Proper handling of cables<br>• Work safety requirements<br>• Lay out and installation of cables<br>• Desirable work values and attitudes (cost conscious, safety conscious, quality conscious, etc.) | | | **LO 2. Lay out cable in accordance with manufacturer's and job requirements.**<br>2.1  Identify cable lay out and installation requirements and constraints from plan and site inspection as per job requirements.<br>2.2  Lay out and install cable to required specification.<br>2.3  Make site safe and secure for cable installation. | **TLE_ICTBFW9-12LOI-IId-h-6** |
| • Methods of cable routing<br>• Inter-agency protocols in fixing cable lines and pole attachments<br>• Safe Installation of pole hardware and accessories<br>• Cable routes and obstructions inspection procedures<br>• Documentation and report | | | **LO 3. Assess support structure as safe for normal working conditions and sound for cable support.**<br>3.1  Check and clear cable route for obstructions using suitable methods and in coordination with authorities concerned.<br>3.2  Request, where necessary, obstructing cables, lines and pole attachments of other carriers to be fixed or corrected to facilitate work of laying out and installing new cables.<br>3.3  Assess the safety of cable support structure for normal working conditions according to job requirements. | **TLE_ICTBFW9-12LOI-IIh-j-IIIa-7** |
| • Conduit bending and radius tolerances<br>• Work safety requirements<br>• Permanent cable support structures | | | **LO 4. Secure cable permanently to support structure in accordance with standard installation procedures.**<br>4.1  Follow bending radius tolerance in accordance with the manufacturer's recommendation.<br>4.2  Refer problems encountered to appropriate personnel as per standard operating procedures (SOP).<br>4.3  Secure permanently cables to support structure in accordance with standard installation procedures | **TLE_ICTBFW9-12LOI-IIIb-e-8** |

| CONTENT | CONTENT STANDARD | PERFORMANCE STANDARD | LEARNING COMPETENCIES | CODE |
|---|---|---|---|---|
| **LESSON 3: INSTALLING AND CONFIGURING CUSTOMER PREMISE EQUIPMENT (ICC)** | | | | |
| • Customer premise equipment<br>• Protocol on receiving job order<br>• Line of Sight (LOS) verification<br>• Base Transceiver Station (BTS)<br>• Tools, materials and PPE in the installation and configuration of CPE | The learner demonstrates an understanding of principles and concepts in installing and configuring customer premise equipment (CPE). | The learner independently demonstrates installing and configuring customer premise equipment (CPE). | **LO 1. Prepare for installation of CPE.**<br>1.1 Receive and interpret job order and other documentation in accordance with enterprise procedures.<br>1.2 Verify Line of Sight from customer's premise towards nearest base transceiver station (BTS).<br>1.3 Identify and prepare necessary tools, equipment, materials and personal protective equipment (PPE) in line with job requirements. | **TLE_ICTBFW9-12ICC-IIIf-h-9** |
| • Line of Sight verification procedures<br>• CPE operation and installation<br>• Cable interconnecting and terminating procedures<br>• CPE configuration using computer<br>• Protocol in reporting problems encountered<br> - Personnel to cable installer<br> - Personnel to ground man/helper<br>• Installation documentation and report | | | **LO 2. Install and configure Customer Premise Equipment (CPE).**<br>2.1 Read and interpret installation plan as per job requirements.<br>2.2 Install radio antenna in accordance with standard industry practices and following safety procedures.<br>2.3 Verify line of sight (LOS) from customer premise towards nearest Base Transceiver Station (BTS).<br>2.4 Prepare and terminate Interconnecting cables between CPE and equipment in accordance with installation manual.<br>2.5 Install CPE in accordance with standard industry practices ensuring safe procedures.<br>2.6 Configure CPE according to company's application software.<br>2.7 Refer problems encountered to appropriate personnel as per standard operating procedures (SOP).<br>2.8 Document installation according to SOP. | **TLE_ICTBFW9-12ICC-IIIh-j-10** |

| CONTENT | CONTENT STANDARD | PERFORMANCE STANDARD | LEARNING COMPETENCIES | CODE |
|---|---|---|---|---|
| • Personal protective equipment <br> • Occupational health and safety practices <br> • Test and adjustment procedures of CPE <br> • Protocol in documentation and reporting of problems encountered | | | **LO 3. Test and adjust CPE in accordance with the company's installer manual.** <br> 3.1 Test and adjust CPE in accordance with the company's installer manual. <br> 3.2 Refer problems encountered to appropriate personnel as per standard operating procedures (SOP). <br> 3.3 Document properly the test and adjustment procedures according to SOP. | **TLE_ICTBFW9-12ICC-IVa-c-11** |
| • Proper handling and scheduling of customer requests and service jobs <br> • Guidelines of communication when handling subscriber's concerns <br> • Locating and verifying suspected area at fault, providing immediate remedies and repair <br> • Documentation procedures | | | **LO 4. Handle customer's post installation concerns.** <br> 4.1 Receive and schedule customer complaints on technical problems for implementation. <br> 4.2 Verify and pinpoint suspected area at fault as per customer's complaint. <br> 4.3 Conduct immediate remedies where applicable to sustain normal operation. <br> 4.4 Request affected customer to acknowledge accomplishment. <br> 4.5 Demonstrate professionalism and interpersonal skills in dealing with subscriber's concerns. <br> 4.6 Log and document action taken in accordance with established procedures. | **TLE_ICTBFW9-12ICC-IVc-e-12** |
| **LESSON 4: RENDERING SERVICE EXCELLENCE TO CUSTOMERS (RSE)** | | | | |
| • Basic products and services <br>    - Fair use policy <br> • Effective communication skills <br> • Protocols for handling requests <br> • Process of handling customer's inquiries | The learner demonstrates an understanding of the principles and concepts in rendering service excellence to customers. | The learner independently demonstrates rendering of service excellence to customers. | **LO 1. Determine and satisfy customers' needs.** <br> 1.1 Identify basic products and services catered to customers. <br> 1.2 Establish details of request and use basic remedies to use in accordance with enterprise policy. <br> 1.3 Address customer's requests with clear, direct, accurate and timely response. | **TLE_ICTBFW9-12RSE-IVf-g-13** |

| CONTENT | CONTENT STANDARD | PERFORMANCE STANDARD | LEARNING COMPETENCIES | CODE |
|---|---|---|---|---|
| | | | 1.4 Handle customer's needs promptly and with empathy. | |
| • Interactive communication<br>• Protocols for handling requests<br>• Process of handling customer's inquiries<br>• Phraseologies in customer interaction<br>• Proper grooming and personal hygiene | | | **LO 2. Conduct effective and efficient customer interactions.**<br>2.1 Identify, respond and resolve customer's inquiries/concerns.<br>2.2 Adhere to guidelines on proper customer interface in accordance with the client/customer's needs.<br>2.3 Use interactive communication in accordance with customer relationship management.<br>2.4 Provide courtesy to the customer in accordance with customer relationship management.<br>2.5 Maintain proper grooming at all times. | **TLE_ICTBFW9-12RSE-IVg-i-14** |
| • Protocols for handling difficult or irate customers<br>• Process of handling customer inquiries<br>• Key principles and steps to retention<br>  - Retention steps<br>  - Key principles<br>• Skills in generating alternative solutions that will meet customer's expectations<br>• Process of handing over customers to supervisors | | | **LO 3. Dealing with difficult and emotional customers.**<br>3.1 Establish nature of the complaint and take appropriate actions.<br>3.2 Establish details of complaints and use basic in accordance with enterprise policy.<br>3.3 Address customer's complaints with clear, direct, accurate and timely response.<br>3.4 Respond and handle complaints with empathy.<br>3.5 Apply key principles and steps to retention in handling difficult customers.<br>3.6 Implement appropriate referral or hands-off procedures as required.<br>3.7 Refer complicated concerns to higher authority. | **TLE_ICTBFW9-12RSE-IVi-j-15** |

| RESOURCES | | | METHODOLOGIES | ASSESSMENT METHOD |
|---|---|---|---|---|
| **TOOLS** | **EQUIPMENT** | **MATERIALS** | | |
| • Adjustable wrench<br>• Blade cutter<br>• Combination pliers<br>• Directional compass<br>• Diagonal pliers<br>• RJ-45 crimper<br>• Extension cord (heavy duty)<br>• Flash light<br>• Standard screwdriver<br>• Claw hammer<br>• Extension ladder<br>• Level<br>• Long nose pliers<br>• Combination wrenches<br>• Toolbox<br>• Vise grip<br>• Electric drill with different bits of various sizes<br>• UTP / FTP cables<br>• RJ45 connectors (shielded)<br>• RJ45 connectors<br>• (non-shielded)<br>• Grounding wire<br>• Cable support<br>• Grounding rod<br>• Tie wrap<br>• Terminal lug | • Computer w/ NIC card<br>• Radio antenna/modem<br>• Internet subscription<br>• Tables and chairs<br>• DLP projector<br>• Whiteboard<br>• Company manual<br>• Body belt & strap<br>• Hard hat/ helmet<br>• Safety shoes<br>• Tool pouch<br><br>**Personal Protective Equipment (PPE)**<br>• Safety harness<br>• Safety gloves<br>• Safety goggles | • Roof mount bracket<br>• Tex Screw , 3/16"<br>• Guy anchor<br>• Hose clamp, No. 16<br>• Whiteboard<br>• RJ 45 connectors<br>• Wall-mount brackets<br>• Sets of washer, bolts and nuts<br><br>**Learning Materials:**<br>• Occupational Health and Safety Handbook<br>• Books<br>• Multimedia Devices<br>• Pictures<br>• Magazines<br>• Manuals<br>• Handouts<br>• Brochures | • Lecture<br>• Discussion<br>• Demonstration<br>• Viewing of multimedia<br>• Hands-on practice | • Observation in workplace<br>• Demonstration<br>• Oral questioning |

## GLOSSARY

1.  **Antenna** - a conductor by which electromagnetic waves are sent out or received.
2.  **Base Transceiver Station (BTS)** - contains the equipment for transmitting and receiving radio signals (transceivers) antennas, and equipment for encrypting and decrypting communications with the Base Station Controller.
3.  **Broadband** - a descriptive term for evolving digital technologies that provide consumers with integrated access to voice, high-speed data service, video- demand services, and interactive delivery services (e.g. Fixed Wireless, DSL, Cable Internet)
4.  **Computer network** - is an interconnection of a group of computers
5.  **CPE (Customer Premise Equipment)** - any terminal and associated equipment and inside wiring located at a subscriber's premises
6.  **Fixed wireless** - refers to wireless devices or systems that are situated in fixed locations, such as an office or home, as opposed to devices that are mobile, such as cell phones and Personal Digital Assistant (PDAs). Fixed wireless devices normally derive their electrical power from utility mains, as opposed to portable wireless devices that normally derive their power from batteries
7.  **Fixed Wireless Broadband Access** - a digital microwave radio technology, which allows radio waves to propagate from a Base Station in Line of Sight (LOS) or Non-Line of Sight (NLOS) to be received by a Customers Premises Equipment (CPE), which is located at the premises to be served e.g school, hospital, clinic, fire or police station, mosque, residential home etc., and from there distributed over a high bandwidth cable.
8.  **FTP (foil screened twisted pair)** - a cable containing multiple pairs of copper wire enclosed in a sheath of aluminum foil. It's used in wiring systems in buildings or other environments where heavy noise adjacent to the wire might cause interference.
9.  **Internet** - a collection of interconnected computer networks, linked by copper wires, fiber-optic cables, wireless connections, etc.
10. **Line-of-Sight (LoS) propagation** - refers to electro-magnetic radiation traveling in a straight line. The rays or waves are deviated or reflected by obstructions and cannot travel over the horizon or behind obstacles. Beyond that, material disperses the rays respectively the energy of the waves.
11. **Mast** - a long upright pole.
12. **NIC (Network Interface Card)** - a piece of computer hardware designed to allow computers to communicate over a computer network.
13. **Propagation** - the motion of waves through or along a medium
14. **Signal** - any time-varying or spatial-varying quantity that can carry information.
15. **Surge suppressor** - an appliance designed to protect electrical devices from voltage spikes. A surge suppressor/protector attempts to regulate the voltage supplied to an electric device by either blocking or by shorting to ground voltages above a safe threshold.
16. **Transmission medium** - any material substance, such as fiber-optic cable, twisted pair, coaxial cable, dielectric-slab waveguide, water, and air (free-space), that can be used for the propagation of signals, usually in the form of modulated radio, light, or acoustic waves, from one point to another.
17. **Transceiver** - a device that has both a transmitter and a receiver which are combined and share common circuitry or a single housing.
18. **Telecommunication** - the assisted transmission of signals over a distance for the purpose of communication.
19. **UTP (unshielded twisted pair)** - cable which is not surrounded by any shielding and often called as Ethernet cable.
20. **World Wide Web** - (commonly shortened to the Web) a system of inter-linked hypertext documents accessed via the Internet. With a Web browser, a user views Web pages that may contain text, images, videos, and other multimedia and navigates between them using hyperlinks.
21  **Bandwidth** - the amount of data transmitted in a given amount of time; usually measured in bits per second, kilobits per second, and megabits per second

## CODE BOOK LEGEND

| LEGEND | | SAMPLE | |
|---|---|---|---|
| **First Entry** | Learning Area and Strand/ Subject or Specialization | Technology and Livelihood Education_Information and Communications Technology Broadband Installation (Fixed Wireless Systems) | **TLE_ICT BFW9-12** |
| | Grade Level | 9 to 12 | |
| **Uppercase Letter/s** | Domain/ Content/ Component/ Topic | Installing Mast and Accessories | **IMA** |
| | | | **-** |
| **Roman Numeral** *Zero if no specific Quarter* | Quarter | First Quarter | **I** |
| **Lower case letter/s** *Put an en-dash (-) in between letters to indicate more than a specific week* | Week | Week one to two | **a-b** |
| | | | **-** |
| **Arabic Number** | Competency | Prepare for mast installation. | **1** |

| DOMAIN / COMPONENT | CODE |
|---|---|
| Installing Mast and Accessories | IMA |
| Layouting and Installing Cables | LOI |
| Installing and Configuring Customer Premise Equipment (CPE) | ICC |
| Rendering Service Excellence to Customers | RSE |

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\*\* (as of November 2015)**

| Grade 7/8 (EXPLORATORY) | GRADES 9-12 | |
|---|---|---|
| **EXPLORATORY**<br><br>**4 sems** | **Computer System Servicing (NC II)++**<br><br>4 sems | (shaded: Other specializations with no pre-requisites may be taken up during these semesters) |
| | **Computer Hardware Servicing (NC II)+**<br><br>4 sems | **\*Telecom OSP and Subscriber Line Installation (Copper Cable/POTS and DSL) (NC II)**<br><br>4 sems |
| | (black: Pre-requisites of the subjects to the right should be taken up during these semesters) | **\*Telecom OSP Installation (Fiber Optic Cable) (NC II)**<br>2 sems / **\*\*\*Broadband Installation (Fixed Wireless Systems) (NC II)**<br>2 sems |
| | **Illustration (NC II)**<br><br>4 sems | **Medical Transcription (NC II)**<br><br>4 sems |
| | **Technical Drafting (NC II)**<br><br>4 sems | **Contact Center Services (NC II)**<br><br>4 sems |
| | **Computer Programming (NC IV)+**<br>When updated, this CG will become the following:<br>1. Programming (.net Technology) (NC II)<br>2. Programming (Java) (NC II)<br>3. Programming (Oracle Database) (NC II)<br>4 sems | **Animation (NC II)**<br><br>4 sems |

\*    Please note that these subjects have pre-requisites mentioned in the CG.
+    CG to be updated by December 2015
++   CG to be uploaded by December 2015
\*\*\*  Subject has two pre-requisites
▒   Other specializations with no pre-requisites may be taken up during these semesters.
■   Pre-requisites of the subjects to the right should be taken up during these semesters.

**\*\*This is just a <u>sample</u>. Schools make their own curriculum maps considering the specializations to be offered. Subjects may be taken up at any point during Grades 9-12.**