COMPETENCY-BASED CURRICULUM

Sector:
INFORMATION AND COMMUNICATION TECHNOLOGY

Qualification:
PROGRAMMING NC IV

TECHNICAL EDUCATION AND SKILLS DEVELOPMENT AUTHORITY
East Service Road, South Superhighway, Taguig City, Metro Manila
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COURSE DESIGN

Programming  NC IV
COURSE DESIGN

COURSE TITLE: PROGRAMMING NC IV

NOMINAL DURATION: 252 hours

COURSE DESCRIPTION:

This course is designed to enhance the knowledge, skills and attitudes of a trainee/student on core competencies such as; Design Program Logic, Apply Program Development Approach, Apply Object-Oriented Program Language Skills and Apply Programming Skills in a Second Language in accordance with the industry standards. It includes common competencies such as; Apply Quality Standards and Operate a Personal Computer.

It also includes basic competencies such as; Utilize specialized communication skills, Develop teams and individuals, Apply problem solving techniques in the workplace, Collect, analyze and organize information, Plan and organize work and Promote environmental protection.

TRAINEE ENTRY REQUIREMENTS:

Trainees or students should possess the following requirements:

- Can communicate both oral and written
- Must be computer literate
- With good moral character
- Physically and mentally fit
- Must be 18 years old or above
## COURSE STRUCTURE

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<th>Nominal Hours</th>
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5.1.3. Implement and monitor plans/activities  
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<td>1. Apply Quality Standards</td>
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<td>3.1. Applying object-oriented program language skills</td>
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### Units of Competency

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<tr>
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<th>Learning Outcome</th>
<th>Nominal Hours</th>
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</thead>
</table>
| 4. Apply programming skills in a second language | 4.1. Applying programming language in a second language | 4.1.1. Apply basic language syntax and layout  
4.1.2. Code using standard algorithms  
4.1.3. Debug code  
4.1.4. Document activities  
4.1.5. Test code | 42 |

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<th>MATERIALS</th>
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<td>PC Packages</td>
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<td>SmallTalk</td>
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<td>MS Office 2003</td>
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<tr>
<td>MS Visio</td>
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<td>Visual Studio.Net</td>
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<td>DOS, UNIX</td>
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<td>WINDOWS OS</td>
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<tr>
<td>LINUX / MAC OS</td>
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### ASSESSMENT METHODS:

- Written and oral examinations
- Demonstration of practical skills
- Direct observation w/ Questioning
- Case study (defense)

### COURSE DELIVERY:

- Demonstration
- Lecture
- Discussion
- Hands – on exercises

### TRAINERS QUALIFICATIONS

- Must be a holder of **PROGRAMMING** NC IV.
- Must have undergone training on TM II
- Must have at least one year job / industry experience or any **COMPUTER PROGRAMMING** related works.
- Pass the required government examination. *(Optional)*
- Must be computer literate.
- Physically and mentally fit.
MODULES OF INSTRUCTIONS

BASIC COMPETENCIES
UNIT OF COMPETENCY : UTILIZE SPECIALIZED COMMUNICATION SKILLS

MODULE TITLE : UTILIZING SPECIALIZED COMMUNICATION SKILLS

MODULE DESCRIPTION : This module covers the knowledge, skills and attitudes required to use specialized communication skills to meet specific needs of internal and external clients, conduct interviews, facilitate group discussion, and contribute to the development of communication strategies.

NOMINAL DURATION : 6 hours

QUALIFICATION LEVEL : NC IV

LEARNING OUTCOMES:

Upon completion of this module the students/trainees will be able to:

LO1. Apply communication strategies to meet specific needs of internal and external client

LO2. Represent the organization in internal and external forums
LO1. APPLY COMMUNICATION STRATEGIES TO MEET SPECIFIC NEEDS OF INTERNAL AND EXTERNAL CLIENT

ASSESSMENT CRITERIA:
1. Specific needs of client and colleagues were identified and met.
2. Different strategies were used to meet communication needs of clients and colleagues.
3. Conflict was addressed in a timely way and in a manner which does not compromise the standing of the organization.
4. Strategies for external and internal dissemination of information were developed, promoted, implemented and reviewed as required.
5. Channel of communications were reviewed and established regularly.
6. Coaching in effective communication was provided.
7. Work related network and relationship were maintained.
8. Negotiation and conflict resolution strategies were used.
9. Communication with client’s colleagues was appropriate to individual needs and organizational objectives.

CONTENTS:
- Communication process
- Full range of communication
- Active listening
- Feedback
- Interpretation
- Role boundaries setting
- Negotiation
- Establishing empathy

CONDITIONS:
The students/trainees must be provided with the following:
- Equipment
- Video tapes
- LCD projector /OHP
- Personal computers
- Learning materials
- Learning element
- Books and manuals
- Transparencies
- Slides

METHODOLOGIES:
- Discussion
- Role playing
- Observation

ASSESSMENT METHODS:
- Written examination
- Direct observation
LO2. REPRESENT THE ORGANIZATION IN INTERNAL AND EXTERNAL FORUMS.

ASSESSMENT CRITERIA:

1. Presentation was relevant, appropriately researched and presented in a manner that promotes the organization.
2. Presentation was cleared and sequentially delivered within a predetermined time.
3. Utilized appropriate media to enhance the presentation.
4. Written communication was consistent with organizational standards.
5. Respect differences in views and respond to inquiries in a manner consistent with organizational standard.

CONTENTS:

- Presentation techniques
- Developing a presentation
- Multi-media utilization in presentation

CONDITIONS:

The students/trainees must be provided with the following:

- Equipment
  - video tapes
  - LCD projector /OHP
  - Personal computers
- Learning materials
  - learning element
  - books and manuals
  - transparencies
  - slides

METHODOLOGIES:

- Discussion
- Role playing
- Observation

ASSESSMENT METHODS:

- Written examination
- Direct observation
UNIT OF COMPETENCY : DEVELOP TEAM AND INDIVIDUAL NEEDS

MODULE TITLE : DEVELOPING TEAM AND INDIVIDUAL NEEDS

MODULE DESCRIPTION : This module covers the knowledge, skills and attitudes required to determine individual needs and develop team for a work group.

NOMINAL DURATION : 4 hours

QUALIFICATION LEVEL : NC IV

LEARNING OUTCOMES:

Upon completion of this module the students/trainees will be able to:

LO1. Determine development needs

LO2. Foster individual and organizational growth

LO3. Monitor and evaluate workplace learning

LO4. Develop team commitment and cooperation

LO5. Facilitate accomplishment of organizational goals
LO1. DETERMINE DEVELOPMENT NEEDS

ASSESSMENT CRITERIA:

1. Learning and development need were systematically identified and implemented in line with organizational requirements.
2. Learning plan to meet individual and group training and development needs was collaboratively developed agreed to and implemented.
3. Individual were encouraged to self evaluate performance and identify areas for improvement.
4. Feedback on performance of team members were collected from relevant service and compared with established team learning process.

CONTENTS:

- Quality assurance and/or procedures manuals
- Goals, objectives , plans, system and process
- Legal and organization policy/guidelines and requirements
- Safety policies, procedures and programs
- Confidentiality and security requirements
- Ethical standards
- Business and performance plans
- Quality and continues improvement processes and standards
- Formal/informal performance appraisal
- Obtaining feedback from superior and colleagues
- Personal reflective behavior strategies
- Routine, organization methods for monitoring service delivery

CONDITIONS:

The students/trainees must be provided with the following:

- Equipment
  - personal computers
  - simulated work area
- Learning materials
  - manuals for organizational requirements
  - quality assurance and procedures
  - work ethics manual
  - personality development
- Supplies and materials
  - Office supplies, ( pen, pencil, paper/bond paper)

METHODOLOGIES:

- Discussion
- Role playing
- Observation

ASSESSMENT METHODS:

- Written examination
- Direct observation
LO2. FOSTER INDIVIDUAL AND ORGANIZATIONAL GROWTH

ASSESSMENT CRITERIA:

1. Learning and development program goals and objectives were identified to match specific knowledge and skills requirements of competency standards.
2. Learning delivery methods were appropriate to the learning goals, the learning style of participants and availability of equipment and resources.
3. Workplace learning opportunities and coaching and mentoring assistance were provided to facilitate individual and team achievement of competencies.
4. Resources and timelines required for learning activities were identified and approved in accordance with organizational requirements.

CONTENTS:

- Coaching and mentoring principles
- Knowledge of career paths and competency standards in the industry
- Learning plans to match skills needs
- Involvement in professional networks
- Formal course participation
- Work experience
- Conference and seminar attendance
- Problem solving
- Resources and timelines required for learning activities

CONDITIONS:

The students/trainees must be provided with the following:

- Equipment
  - personal computers
- Learning materials
  - Coaching and mentoring principles manual
  - Learning and development program goals and objectives
  - Learning activity methods
- Supplies and materials
  - Office supplies, ( pen, pencil, paper/bond paper)

METHODOLOGIES:

- Problem solving
- Formal course participation
- On the job coaching/mentoring
- Presentation/demonstration
- Conference and seminar attendance

ASSESSMENT METHODS:

- Direct observation
- Case studies (Defense)
- Demonstration
LO3. MONITOR AND EVALUATE WORKPLACE LEARNING

ASSESSMENT CRITERIA:

1. Feedback from individuals or teams was used to identify and implement improvements in future learning arrangements.
2. Outcomes and performance of individuals/teams were assessed and recorded to determine the effectiveness of developed programs and the extent of additional development support.
3. Modifications to learning plans were negotiated to improve the efficiency and effectiveness of learning.
4. Records and reports of competency were documented and maintained within organizational requirements.

CONTENTS:

- Coaching and mentoring principles
- Methods and techniques for eliciting and interpreting feedback
- Methods for identifying and prioritizing personal development opportunities and options.
- Knowledge of career paths and competency standards in industry

CONDITIONS:

The students/trainees must be provided with the following:

- Equipment
  - personal computers
  - simulated work area
- Learning materials
  - manuals for organizational requirements
  - quality assurance and procedures
  - work ethics manual
  - personality development manual
- Supplies and materials
  - Office supplies, (pen, pencil, paper/bond paper)

METHODOLOGIES:

- On-the-job coaching and mentoring
- Problem solving
- Formal course participation

ASSESSMENT METHODS:

- Written examination
- Direct observation
LO4. DEVELOP TEAM COMMITMENT AND COOPERATION

ASSESSMENT CRITERIA:

1. Open communication processes to obtain and share information was used by team.
2. Decisions were team made in accordance with its agreed roles and responsibilities.
3. Mutual concern and camaraderie is developed in the team.

CONTENTS:

- Goals, objectives, plans, procedures
- Coaching and mentoring principles
- Formal /informal learning programs
- Knowledge on how to develop team commitment and cooperation
- Personal reflective behavior strategies
- Understanding how to work effectively with team members of different work style, aspirations, culture and perspective.

CONDITIONS:

The students/trainees must be provided with the following:

- Equipment
  - Personal computers
  - Simulated team
- Learning materials
  - Manuals for organizational requirements
  - Quality assurance and procedures
  - Work ethics manual
  - Personality development
- Supplies and materials
  - Office supplies, (pen, pencil, paper/bond paper)

METHODOLOGIES:

- On-the-job coaching
- Seminar training (team building)

ASSESSMENT METHODS:

- Direct observation of work activities
- Observation of role playing
LO5. FACILITATE ACCOMPLISHMENT OF ORGANIZATIONAL GOALS

ASSESSMENT CRITERIA:

1. Team members actively participated in team activities and communication process.
2. Individual and teams developed individual and joint responsibility for their actions.
3. Collaborative efforts are sustained to obtain organizational goals.

CONTENTS:

- Understanding how to work effectively with team members who are divers work styles, aspirations, cultures and perspective
- Understanding how to facilitate team development and improvement
- Communication skills including receiving feedback and reporting, maintaining effecting effective relationship & conflict management
- Quality assurance and/or procedures

CONDITIONS:

The students/trainees must be provided with the following:

- Equipment
  - personal computers
  - simulated work area
- Learning materials
  - manuals for organizational requirements
  - quality assurance and procedures
  - work ethics manual
  - personality development
- Supplies and materials
  - Office supplies, ( pen, pencil, paper/bond paper)

METHODOLOGIES:

- Discussion
- Role playing
- On-the-job coaching
- Conference seminars

ASSESSMENT METHODS:

- Written examination
- Direct observation
- Interview
UNIT OF COMPETENCY: APPLY PROBLEM SOLVING TECHNIQUES IN THE WORKPLACE

MODULE TITLE: IDENTIFYING POSSIBLE SOLUTION

MODULE DESCRIPTION: This module covers the knowledge, skills and attitude required to identify all possible options for solving workplace problems through analysis.

NOMINAL DURATION: 4 hours

QUALIFICATION LEVEL: NC IV

LEARNING OUTCOMES:

Upon completion of this module, the students/trainees will be able to:

LO1. Analyze the problem

LO2. Identify fundamental cause of the problem

LO3. Determine possible solution
LO1. ANALYZE THE PROBLEM

ASSESSMENT CRITERIA:

1. Area of responsibility was determined.
2. Possible causes of problem were identified based on experience and uses of problem solving tools/analytical techniques.
3. Possible cause statements were developed.

CONTENTS:

- Problem solving tools/analytical techniques
- Area of responsibility
  - work responsibility
  - problem solution
  - preventive maintenance and diagnostic policy
  - rules and technical responsibility
  - vendor and product service level support agreement

CONDITIONS:

The students/trainees must be provided with the following:

- Equipment
  - OHP
  - Computers
- Instructional materials
  - reference books
  - sample of process and other problems
  - Learning Guides

METHODOLOGIES:

- Direct observation
- Simulation/role playing

ASSESSMENT METHODS:

- Written
- Practical/performance test
- Case studies (Defense)
LO2. IDENTIFY FUNDAMENTAL CAUSE OF THE PROBLEM

ASSESSMENT CRITERIA:

1. Area of responsibility was reviewed.
2. Listings of possible cause statements were analyzed.
3. Fundamental cause statement was developed.

CONTENTS:

- Identification of fundamental cause of problem
- Application of problem solving tools / analytical techniques

CONDITIONS:

The students/trainees must be provided with the following:

- Equipment
  - OHP
  - Computers
- Instructional materials
  - reference books
  - sample of process and other problems
  - Learning Guides

METHODOLOGIES:

- Direct observation
- Simulation /role playing

ASSESSMENT METHODS:

- Written
- Practical/performance test
- Case studies (Defense)
LO3. DETERMINE POSSIBLE SOLUTION

ASSESSMENT CRITERIA:

1. Possible options for the resolution of the problem were listed
2. Possible options were analytical based on strength and weaknesses
3. Corrective action was identified to remove the problem and possible future causes.

CONTENTS:

- Listing of the possible options for the resolution of the problem
- Determining strength and weaknesses of a problem
- Determining corrective action
- Application of problem solving techniques

CONDITIONS:

The students/trainees must be provided with the following:

- Equipment
  - OHP
  - Computers
- Instructional materials
  - reference books
  - sample of process and other problems
  - Learning Guides

METHODOLOGIES:

- Direct observation
- Simulation /role playing

ASSESSMENT METHODS:

- Written
- Case study (Defense)
UNIT OF COMPETENCY: APPLY PROBLEM SOLVING TECHNIQUES IN THE WORKPLACE

MODULE TITLE: RECOMMENDING AND IMPLEMENTING SOLUTIONS

MODULE DESCRIPTION: This module covers the knowledge, skills, and attitudes required to recommend and implement solutions to a problem using a structured process improvement, typically performed by an experienced technician, team leader, or supervisor.

NOMINAL DURATION: 4 hours

QUALIFICATION LEVEL: NC IV

LEARNING OUTCOMES:

Upon completion of this module, the students/trainees will be able to:

LO1. Prepare communication or documentation report
LO2. Present recommendation to appropriate personnel
LO3. Implement solution
LO1. PREPARE COMMUNICATION OR DOCUMENTATION

ASSESSMENT CRITERIA:

1. Draft (hand written) report for corrective actions to the problem was prepared
2. Draft (hand written) report and documents were reviewed in accordance with standard format.
3. Communication/Documentation report was finalized based on standard format & SOP’s

CONTENTS:

- Preparation of communication & documentation report
- Types of communication
  - Hand written
  - Printed report
  - Internal memos
  - Electronic mail
  - Briefing notes
  - Bulletin boards
- Documentation
  - Audit trails
  - Naming standards
  - Version control

CONDITIONS:

The students/trainees must be provided with the following:

- Equipment
  - OHP
  - Computers
- Instructional materials
  - reference books
  - corrective actions
  - statement/reports
  - Learning Guides

METHODOLOGIES:

- Direct observation
- Simulation/role playing

ASSESSMENT METHODS:

- Written examination
- case study (defense)
LO2. PRESENT RECOMMENDATION TO APPROPRIATE PERSONNEL

ASSESSMENT CRITERIA:

1. Recommendations were presented to appropriate personnel
2. Changes, corrections, and further instructions were noted and finalized
3. Recommendations were followed-up.

CONTENTS:

- Oral communication
- Receiving and finalization of instructions
- Organizational protocol

CONDITIONS:

The students/trainees must be provided with the following:

- Equipment
  - OHP
  - Computers
- Instructional materials
  - Reference books
  - Recommendation report
  - Learning Guides

METHODOLOGIES:

- Direct observation
- Simulation /role playing

ASSESSMENT METHODS:

- Written examination
- Case study (defense)
LO3. IMPLEMENT SOLUTIONS

ASSESSMENT CRITERIA:

1. Measurable objectives were identified
2. Resources needed were identified
3. Timelines were identified in accordance with safety and operating procedures

CONTENTS:

- Setting of objectives
- Statutory and vendor requirements
- Ergonomic & environmental factors
- Identification of timelines

CONDITIONS:

The students/trainees must be provided with the following:

- Equipment
  - OHP
  - Computers
- Instructional materials
  - Reference books
  - Recommendation report
  - Learning Guides

METHODOLOGIES:

- Direct observation
- Simulation/role playing
- Distance education

ASSESSMENT METHODS:

- Written examination
- Case study (defense)
UNIT OF COMPETENCY : COLLECT, ANALYZE AND ORGANIZE INFORMATION

MODULE TITLE : COLLECTING, ANALYZING AND ORGANIZING INFORMATION

MODULE DESCRIPTION : This module covers the outcomes required to process, analyze, interpret and organize workplace information and other relevant data.

NOMINAL DURATION : 4 hours

QUALIFICATION LEVEL : NC IV

LEARNING OUTCOMES:

Upon completion of this module, the trainee/student must be able to:

LO 1. Study information requirements

LO 2. Process data

LO 3. Analyze, interpret and organize information gathered

LO 4. Present findings / recommendations
LO 1. STUDY INFORMATION REQUIREMENTS

ASSESSMENT CRITERIA:

1. Identified the needs using established research procedures.
2. Used relevant forms and recording system.
3. Determined information requirements based on organizational goals and objectives.

CONTENTS:

- Data processing, information analysis and interpretation.
- Research Methods: Qualitative, Quantitative, Statistical
- Effective communication
- Report writing

CONDITIONS:

The students/trainees must be provided with the following:

- Reference Book
- Handouts/Modules/Printed Materials
- Forms

METHODOLOGIES:

- Lectures
- Discussions
- Demonstrations

ASSESSMENT METHODS:

- Written / Oral Examination
- Exercises
- Case Study (defense)
LO 2. PROCESS DATA

ASSESSMENT CRITERIA:

1. Collected and collated data based on the prescribed method.
2. Utilized relevant research methods and processed data based on the objective of the program.
3. Compiles information according to the required form.

CONTENTS:

- Data processing
- Research Method
- Problem Solving

CONDITIONS:

The students/trainees must be provided with the following:

- PC
- Reference Book
- Handouts/Modules/Printed Materials
- Data Processing Software (MS WORD, EXCEL, etc.)

METHODOLOGIES:

- Lectures
- Discussions
- Demonstrations
- Reporting

ASSESSMENT METHODS:

- Written / Oral Examination
- Observation
- Practical Demonstration
- Case Study (defense)
LO 3. ANALYZE, INTERPRET AND ORGANIZE INFORMATION GATHERED

ASSESSMENT CRITERIA:

1. Analyzed and organized information gathered.
2. Used statistical analysis according to the objectives of the program.
3. Prepared graphs and other visual presentation to facilitate analysis interpretation of information.

CONTENTS:

- Research and analysis
- Read / Interpret data and information
- Problem solving
- Presentation graphics

CONDITIONS:

The students/trainees must be provided with the following:

- PC
- Reference Book
- Handouts/Modules/Printed Materials
- Desktop Publishing Software

METHODOLOGIES:

- Lectures
- Discussions
- Demonstrations

ASSESSMENT METHODS:

- Written / Oral Examination
- Observation
- Practical Demonstration
- Case Study (defense)
LO 4. PRESENT FINDINGS / RECOMMENDATIONS

ASSESSMENT CRITERIA:

1. Present findings / recommendations summarized in user – friendly manner.
2. Gathered relevant inputs to finalize reports.
3. Prepared draft report based on summary formats.
4. Submitted / disseminated technical reports to concerned offices.

CONTENTS:

• Technical Report Writing

CONDITIONS:

The students/trainees must be provided with the following:

• PC
• Reference Book
• Handouts/Modules/Printed Materials

METHODOLOGIES:

• Lectures
• Discussions
• Demonstrations

ASSESSMENT METHODS:

• Written / Oral Examination
• Observation
• Practical Demonstration
• Case Study (defense)
UNIT OF COMPETENCY : PLAN AND ORGANIZE WORK

MODULE TITLE : PLANNING AND ORGANIZING WORK

MODULE DESCRIPTION : This module covers knowledge, skills and attitudes required to plan and organize work.

NOMINAL DURATION : 4 hours

QUALIFICATION LEVEL : NC IV

LEARNING OUTCOMES:

Upon completion of this module the students/trainees will be able to:

LO1. Set work objectives

LO2. Plan and schedule work activities

LO3. Implement and monitor plans/activities

LO4. Review and evaluate work plans and activities
LO1. SET WORK OBJECTIVES.

ASSESSMENT CRITERIA:

1. Objectives were relevant to work activities in accordance with organizational aims.
2. Objectives were based on accurate, relevant and correct information.
3. Objectives were stated as measurable targets with clear time frames.
4. Objectives were communicated/disseminated to team members.

CONTENTS:

- Organizational policies & procedures
- Planning process
- Communication process
- Organizational aims
- Prioritizing and managing workloads
- SWOT analysis

CONDITIONS:

The students/trainees must be provided with the following:

- Training materials
  - Organizational policies and procedures
  - Reference materials on organizational planning
  - pen, paper
- Students project

METHODOLOGIES:

- Brainstorming
- Discussion
- Case studies
- Role playing
- Small group work

ASSESSMENT METHODS:

- Written
- Direct observation
- Interview
LO2. PLAN AND SCHEDULE WORK ACTIVITIES.

ASSESSMENT CRITERIA:

1. Task/work activities were identified and prioritized in accordance with organizational aims.
2. Task/work activities were scheduled in accordance with organizational aims.
3. Resources for each activity were identified and allocated in accordance with organizational aims.
4. Schedule of work activities were coordinated with relevant staff in accordance with organizational aims.

CONTENTS:

- GANTT chart
- Consultation and negotiation with stakeholders
- Prioritizing and managing work loads

CONDITIONS:

The students/trainees must be provided with the following:

- Equipment
  - computers
- Training materials
  - GANTT charts
  - Reference materials on organizational planning
  - pen, paper
- Students projects

METHODOLOGIES:

- Brainstorming
- Discussion
- Case studies
- Role playing
- Small group work

ASSESSMENT METHODS:

- Written
- Direct observation
- Interview
LO3. IMPLEMENT AND MONITOR PLANS/ACTIVITIES.

ASSESSMENT CRITERIA:

1. Work plans were implemented with set time frame, resources and required standards of the organization
2. Work activities were monitored and reviewed against the set objectives of the organization.
3. Deviations from work activities were reported and recommendations were obtained / negotiated with appropriate personnel.
4. Reporting requirements were complied with recommended format.
5. Files record were established and maintained

CONTENTS:

- Developing work plans
- Implementation and monitoring
- Reporting
- Setting schedules
- Contingency approach (planning)
- Coordinating schedules
- Motivation and team building

CONDITIONS:

The students/trainees must be provided with the following:

- Equipment
  - computers
- Training materials
  - work plan schedules
  - monitoring tools and materials
  - pen, paper
- Plant/enterprises
  - Students projects

METHODOLOGIES:

- Brainstorming
- Discussion
- Case studies
- Role playing
- Small group work

ASSESSMENT METHODS:

- Written
- Direct observation
- Interview
LO4. REVIEW AND EVALUATE WORK PLANS AND ACTIVITIES.

ASSESSMENT CRITERIA:

1. Review of work activities/outcomes was based on accurate, relevant and current information.
2. Review was based on comprehensive consultation with appropriate personnel using reliable feedback tools.
3. Results of review were provided to appropriate personnel in recommended format.
4. Performance appraisal report was conducted and reported in accordance with organizational requirements.
5. Feedback mechanisms were followed in accordance with organizational policies.

CONTENTS:

- Report writing
- Collecting information/data gathering
- Feedback
- Performance appraisal

CONDITIONS:

The students/trainees must be provided with the following:

- Equipment
  - computers
- Training materials
  - reporting formats
  - performance appraisal format
  - reference materials on research techniques
  - pen, paper
- Plant/enterprises (simulation)
  - Students projects

METHODOLOGIES:

- Brainstorming
- Discussion
- Case studies
- Role playing
- Small group work

ASSESSMENT METHODS:

- Written
- Direct observation
- Interview
UNIT OF COMPETENCY: PROMOTE ENVIRONMENTAL PROTECTION

MODULE TITLE: PROMOTING ENVIRONMENTAL PROTECTION

MODULE DESCRIPTOR: This module covers the knowledge, skills and attitude required in adhering to environmental protection principles, strategies and guidelines.

NOMINAL DURATION: 4 hours

QUALIFICATION LEVEL: NC IV

LEARNING OUTCOMES:

Upon completion of this module, the trainee/student must be able to:

LO 1. Study Guidelines for environmental concerns.

LO 2. Implement specific environmental programs.

LO 3. Monitor activities on environmental protection / programs.
LO 1. STUDY GUIDELINES FOR ENVIRONMENTAL CONCERNS

ASSESSMENT CRITERIA:

1. Environmental legislation / conventions and local ordinances were identified according to the different environmental aspects / impact
2. Industrial standard / environmental practices according to the different environmental concerns were described.

CONTENTS:

- Environmental issues and concerns.
- Features of Environmental management strategy
- Sanitary Code
- Environmental Code of Practice
- International Environmental Protocols (Montreal, Kyoto)

CONDITIONS:

The students/trainees must be provided with the following:

- Workplace / assessment locations
- Legislation, policies, procedures, protocols and local ordinances relating to environmental protection.
- Case studies / scenarios relating to environmental protection (sample)

METHODOLOGIES:

- Discussion – Demonstration
- Research and Reporting

ASSESSMENT METHODS:

- Written / Oral Examination
- Interview / Third Party Report
- Portfolio
LO 2. IMPLEMENT SPECIFIC ENVIRONMENTAL PROGRAMS

ASSESSMENT CRITERIA:

1. Programs / activities were identified according to organizations policies and guidelines.
2. Individual roles / responsibilities were determined and performed based on the activities identified.
3. Problems / constraints encountered were resolved in accordance with organizations policies and guidelines.
4. Stakeholders were consulted based on company guidelines.

CONTENTS:

- Community needs and expectations
- Environment – Friendly / environmental advocates
- 5 S of good house keeping
- 3R’s Reduce, Reuse and Recycle.

CONDITIONS:

The students/trainees must be provided with the following:

- Workplace / assessment location
- Case studies / scenarios relating to environmental protection (sample)

METHODOLOGIES:

- Lectures
- Discussions
- Demonstrations
- Reporting
- Role Playing

ASSESSMENT METHODS:

- Written / Oral Examination
- Observation
- Practical Demonstration
LO 3. MONITOR ACTIVITIES ON ENVIRONMENTAL PROTECTION / PROGRAM

ASSESSMENT CRITERIA:

1. Activities were periodically monitored and evaluated according to the objectives of the environmental program.
2. Feedback from stakeholders were gathered and considered in proposing enhancement to the program based on consultations.
3. Data gathered were analyzed based on evaluation requirements.
4. Recommendations were submitted based on the findings.
5. Management Support system were set / established to sustain and enhance the program.
6. Environmental incidents were monitored and reported to concerned / proper authorities.

CONTENTS:

- Communicating effectively
- Performing research and analysis
- Reading / interpreting data and information
- Problem solving

CONDITIONS:

The students/trainees must be provided with the following:

- Personal Computer
- Reference Book
- Handouts/Modules/Printed Materials
- Statistical Package
- Workplace / Assessment location

METHODOLOGIES:

- Demonstrations
- Reporting

ASSESSMENT METHODS:

- Written / Oral Examination
- Observation
- Interview / Third – Party Reports
MODULES OF INSTRUCTIONS

COMMON COMPETENCIES
UNIT OF COMPETENCY : APPLY QUALITY STANDARDS

MODULE TITLE : APPLYING QUALITY STANDARDS

MODULE DESCRIPTION : This module covers the knowledge, skills, attitudes and values needed to apply quality standards in the workplace. The unit also includes the application of relevant safety procedures and regulations, organization procedures and customer requirements.

NOMINAL DURATION : 8 hours

QUALIFICATION LEVEL : NC II

LEARNING OUTCOMES:

Upon completion of this module, the trainee/student must be able to:

L.O.1. Assess quality of received materials
L.O.2. Assess own work
L.O.3. Engage in quality improvement
LO 1. ASSESS QUALITY OF RECEIVED MATERIALS

ASSESSMENT CRITERIA:

1. Work instruction obtained and work carried out in accordance with standard operating procedures.
2. Received materials checked against workplace standards and specifications.
3. Faulty materials related to work are identified and isolated.
4. Faults and any identified causes recorded and or reported to the supervisor concerned in accordance with workplace procedures.
5. Faulty materials are replaced in accordance with workplace procedures.

CONTENTS:

- Reading skills required to interpret work instruction.
- Workplace standards and specifications.
- Procedures in obtaining and carrying out work instructions.
- Quality checking procedures.
- Fault identification and reporting.
- Safety and environmental aspects of production process.
- Carry out work in accordance with policies and procedures.

CONDITIONS:

Students/ trainees must be provided with the following:

- Work instructions.
- Company / Workplace standards and specifications.

METHODOLOGIES:

- Lecture-demonstration.
- Self-paced instruction.
- Group discussion.

ASSESSMENT METHODS:

- Hands-on.
- Direct observation.
- Practical demonstration.
LO 2. ASSESS OWN WORK

ASSESSMENT CRITERIA:

1. Documentation relative to quality within the company identified and used
2. Completed work checked against workplace standards and specifications
3. Errors are identified and isolated
4. Information on the quality and other indicators of production procedures recorded in accordance with workplace procedures
5. In cases of deviation from specific quality standards, causes documented and reported in accordance with the workplace’s standard operating procedures.

CONTENTS:

- Communication skills needed to interpret and apply defined work procedures
- Identifying errors (deviation from customer and or organization requirements)

CONDITIONS:

Students/trainees must be provided with the following:

- Organization work procedures
- Manufacturer’s Instruction Manual
- Customer requirements
- Other forms

METHODOLOGIES:

- Lecture-demonstration
- Self-paced instruction
- Group discussion

ASSESSMENT METHODS:

- Hands-on
- Direct observation
- Practical demonstration
LO 3. ENGAGE IN QUALITY IMPROVEMENT

ASSESSMENT CRITERIA:

1. Process improvement procedures participated in relative to workplace assignment
2. Work carried out in accordance with process improvement procedures
3. Performance of operation or quality of product of service to ensure customer satisfaction monitored

CONTENTS:

- Relevant production processes, materials and products
- Safety and environmental aspects of production processes
- Critical thinking
- Quality improvement processes

CONDITIONS:

Students/ trainees must be provided with the following:

- Organization work procedures
- Manufacturer’s Instruction Manual
- Customer requirements
- Other forms

METHODOLOGIES:

- Lecture-demonstration
- Self-paced instruction
- Group discussion

ASSESSMENT METHODS:

- Hands-on
- Direct observation
- Practical demonstration
UNIT OF COMPETENCY : OPERATE A PERSONAL COMPUTER

MODULE TITLE : OPERATING A PERSONAL COMPUTER

MODULE DESCRIPTOR : This module defines the competency required to operate a personal computer by: starting the PC, logging in, using and working with files, folders and programs, saving work, and closing down the PC

NOMINAL DURATION : 10 hours

QUALIFICATION LEVEL : NC II

LEARNING OUTCOMES:

Upon completion of this module, the trained student must be able to:

LO 1. Start and Shutdown computers
LO 2. Arrange and customize desktop/windows setting
LO 3. Work with files and folders (or directories)
LO 4. Work with user application programs
LO 5. Print information
LO. 1 START AND SHUTDOWN COMPUTERS

ASSESSMENT CRITERIA:

1. The peripheral devices are connected as stated in operating manual.
2. Power is checked and the computer and peripheral devices are switched on as shown in computer manual.
3. Logging in or logging off is done in accordance with the existing setup.
4. The operating system features and functions are accessed and navigated as demonstrated.
5. Hardware configuration and other system features are checked as stated in procedure.
7. All open application programs are closed according to computer manual.
8. Computer and peripheral devices are shutdown according to procedure.

CONTENTS:

- Connecting of wires and peripheral devices
- Switching of powers and peripheral devices
- Proper logging in and logging off procedure
- Operating System are properly work
- Saving and closing application programs.
- Computer unit is properly shutdown

CONDITIONS:

Students / trainees must be provided with the following.

- Computer set / Workstations
- Connection of wires / peripheral devices
- Lists / Pictures of Computer Hardware and peripheral devices
- Media / LCD / TV 32 inches
- Instructional Materials
- Minutes/Agendas

METHODOLOGIES:

- Self–paced
- Demonstration
- Discussion

ASSESSMENT METHODS:

- Direct observation
- Demonstration of skills
- Evaluation
- Interview
LO. 2 ARRANGE AND CUSTOMIZE DESKTOP/WINDOWS SETTING

ASSESSMENT CRITERIA:

1. The desktop screen or Windows elements are changed as needed in manual procedure
2. Desktop icons are added, renamed, moved, copied or deleted in accordance to procedure
3. The online help functions are accessed or used as needed instructional materials
4. Desktop icons of application programs are selected, opened and closed as shown in manual procedure
5. Properties of icons are displayed as stated in procedure
6. Computer or desktop settings are saved and restored based on the existing setup

CONTENTS:

- The desktop screen are modified
- Manipulating of desktop
- Accessing and using the online help functions
- Opening and closing of selected desktop icons
- Presentation of icons properties
- Restoring of computer desktop

CONDITIONS:

Students / trainees must be provided with the following.

- Computer set / Workstations
- LAN and Internet connections
- Media / LCD / TV 32 inches
- Diskettes, CD-RW, Flash Drive, Zip Drive
- Instructional materials
- Minutes/Agendas

METHODOLOGIES:

- Self–paced
- Demonstration
- Discussion

ASSESSMENT METHODS:

- Direct observation
- Demonstration of skills
- Evaluation
- Interview
LO. 3 WORK WITH FILES AND FOLDERS (OR DIRECTORIES)

ASSESSMENT CRITERIA:

1. A file or folder is created, opened, moved, renamed, copied or restored as shown in manual procedure
2. Details and properties of files and folders are displayed or viewed with the existing setup
3. Various files are organized for easy lookup and use as shown in computer manual procedure
4. Files and information are searched as stated in instructional material
5. Disks are checked, erased or formatted as necessary with the following manual procedure

CONTENTS:

- Manipulating of file or folder
- Restoring of files
- Viewing of files and folders
- Organizing of different files
- Searching of files and information
- Manipulating of disks

CONDITIONS:

Students / trainees must be provided with the following.

- Computer set / Workstations
- Application programs (software)
- Media / LCD / TV 32 inches
- Diskettes, CD-RW, Flash Drive, Zip Drive
- Instructional Materials
- Minutes/Agendas

METHODOLOGIES:

- Self–paced
- Demonstration
- Discussion

ASSESSMENT METHODS:

- Direct observation
- Demonstration of skills
- Evaluation
- Interview
LO. 4 WORK WITH USER APPLICATION PROGRAMS

ASSESSMENT CRITERIA:

1. Application programs are added, changed, removed or run as followed in computer manual procedure
2. User software or application program are installed, updated and upgraded as stated in manual procedure
3. Information/data are moved between documents or files in accordance to the instructional materials

CONTENTS:

- Manipulating of application programs
- Updating and upgrading user software
- Moving of documents

CONDITIONS:

Students / trainees must be provided with the following.

- Computer set / Workstations
- Documents detailing style guide / policy
- Application programs (software)
- Media / LCD / TV 32 inches
- Diskettes, CD-RW, Flash Drive, Zip Drive
- Hands – On materials / Instructional materials
- Minutes/Agendas

METHODOLOGIES:

- Self–paced
- Demonstration
- Discussion

ASSESSMENT METHODS:

- Direct observation
- Demonstration of skills
- Evaluation
- Interview
LO. 5 PRINT INFORMATION

ASSESSMENT CRITERIA:

1. Printer is added or installed and correct printer settings is ensured with the following service manual procedure
2. Default printer is assigned accordingly with the existing setup
3. Information or document is printed on the installed printer with the following setup manual procedure
4. Progress of print jobs are viewed and deleted as required in manual procedure

CONTENTS:

- Installing or adding printer
- Page set-up is ensured
- Set default of printer
- Printing of information or document
- Viewing and deleting of print jobs

CONDITIONS:

Students / trainees must be provided with the following.

- Computer set / Workstations
- Instructional materials
- Application programs (software)
- Media / LCD / TV 32 inches
- Printer
- Installer of printer (CD)
- LAN connections
- Diskettes, CD-RW, Flash Drive, Zip Drive
- Minutes/Agendas

METHODOLOGIES:

- Self–paced
- Demonstration
- Discussion

ASSESSMENT METHODS:

- Direct observation
- Demonstration of skills
- Evaluation
- Interview
MODULES OF INSTRUCTIONS

CORE COMPETENCIES
UNIT OF COMPETENCY: DESIGN PROGRAM LOGIC

MODULE TITLE: DESIGNING PROGRAM LOGIC

MODULE DESCRIPTOR: This module defines the competency required to describe the various processes in a program to ensure that there is understanding of user and design requirements.

NOMINAL DESCRIPTOR: 54 hours

QUALIFICATION LEVEL: NC IV

SUMMARY OF LEARNING OUTCOMES:

Upon completion of this module, the trainee/student must be able to:

LO 1. Select the program logic design approach

LO 2. Document the program logic or design

LO 3. Validate the design
LO 1. SELECT THE PROGRAM LOGIC DESIGN APPROACH

ASSESSMENT CRITERIA:

1. Reviewed and clarified the design documentation and obtained the requirements for the programs.
2. Determined the design approach to be taken in coding and linked the modules.
3. Confirmed sufficient knowledge assessment of programming and program logic formulation or design skills.

CONTENTS:

- The program design and structure
- Flowchart symbols
- Algorithm
- Pseudo Code
- Elements of Programming Language
- Program Control Structure
- Program constructs / modules/objects

CONDITIONS:

The students/trainees must be provided with the following:

- PC Package with OOPL
- Reference Books
- Handouts/Modules/Printed Materials

METHODOLOGIES:

- Lectures
- Discussions
- Demonstrations

ASSESSMENT METHODS:

- Written / Oral Examination
- Observation
- Practical Demonstration
- Case Study (Defense)
LO 2. DOCUMENT THE PROGRAM LOGIC OR DESIGN

ASSESSMENT CRITERIA:

1. Created diagrams of program flow and modules according to project standards.
2. Documented program scope and limits according to project standard.
3. Documented or referenced the routines or procedures according to project standard.
4. Identified and revised references for tables, files, I/O and other programs functionalities according to program requirements.
5. Produced the required design to assess the ability to meet technical requirements successfully.

CONTENTS:

- Coding the Programs
- Steps or Procedures to document the program
- Application of documentation tools
- Printing the programs

CONDITIONS:

The students/trainees must be provided with the following:

- PC Package with OOPL
- Reference Book
- Handouts/Modules/Printed Materials

METHODOLOGIES:

- Lectures
- Discussions
- Demonstrations

ASSESSMENT METHODS:

- Written / Oral Examination
- Observation
- Practical Demonstration
- Case Study (Defense)
LO 3. VALIDATE THE DESIGN

ASSESSMENT CRITERIA:

1. Checked the program flow, states or conditions for interfaces and compliance to design documentation requirements.
2. Gained feedbacks / inputs from appropriate persons as needed.

CONTENTS:

- Review the designed program logic flow
- Coding, Compiling and Debugging
- Program or design specifications
- Test and implementation of the program

CONDITIONS:

The students/trainees must be provided with the following:

- PC Package with OOPL
- Reference Book
- Handouts/Modules/Printed Materials

METHODOLOGIES:

- Lectures
- Discussions
- Demonstrations

ASSESSMENT METHODS:

- Written / Oral Examination
- Observation
- Practical Demonstration
- Case Study (Defense)
UNIT OF COMPETENCY : APPLY PROGRAM DEVELOPMENT APPROACH

MODULE TITLE : APPLYING PROGRAMMING DEVELOPMENT APPROACH

MODULE DESCRIPTOR : This module covers the requirement to apply a programming development approach when writing or coding program.

NOMINAL DESCRIPTOR : 54 hours

QUALIFICATION LEVEL : NC IV

SUMMARY OF LEARNING OUTCOMES:

Upon completion of this module, the trainee/student must be able to:

LO 1. Determine and select appropriate program development approach.

LO 2. Apply the selected development approach.
LO 1. DETERMINE AND SELECT APPROPRIATE PROGRAMMING DEVELOPMENT APPROACH

ASSESSMENT CRITERIA:

1. Determined program activities according to job requirements.
2. Selected appropriate development approach.
3. Created initial plan to guide the program development process.

CONTENTS:

- Concept of Programming Languages
- Evolution of Programming Languages
- Integrated Development Environment
- Graphical User Interface
- Procedures of Programming
- Writing Elementary Program

CONDITIONS:

The students/trainees must be provided with the following:

- PC with installed programming language
- Documentation tool software
- Reference Book
- Handouts/Modules/Printed Materials

METHODOLOGIES:

- Lecture / Demonstrations
- Group Discussions
- Hands-on exercises

ASSESSMENT METHODS:

- Observation
- Practical demonstration
- Case Study (defense)
LO 2. APPLY THE SELECTED DEVELOPMENT APPROACH

ASSESSMENT CRITERIA:

1. Used documentation tools for programming development.
2. Defined and used program structure organizations and proper naming conventions.
3. Identified, monitored and checked resources for programming activities.
4. Reviewed and documented opportunities for improvement, lessons and recommendations for future projects.
5. Submitted the program deliverables to appropriate person for approval.

CONTENTS:

- Program specifications and user requirements
- Programming elements
- Procedures in writing and developing program
- Programming constructs/modules/objects

CONDITIONS:

The students/trainees must be provided with the following:

- PC
- Documentation tool software
- Reference Book
- Handouts/Modules/Printed Materials

METHODOLOGIES:

- Lecture / Demonstrations
- Group Discussions
- Reporting
- Hands on exercises

ASSESSMENT METHODS:

- Observation
- Hands-on exercises
- Practical demonstration
- Written and oral examination
UNIT OF COMPETENCY : APPLY OBJECT-ORIENTED PROGRAM LANGUAGE SKILLS

MODULE TITLE : APPLYING OBJECT-ORIENTED PROGRAM LANGUAGE SKILLS

MODULE DESCRIPTOR : This module defines the competency required to undertake programming tasks using an object oriented programming language. Competency includes tool usage, documentation, debugging and testing techniques in support of the programming activities.

NOMINAL DURATION : 54 hours

QUALIFICATION LEVEL : NC IV

SUMMARY OF LEARNING OUTCOMES:

Upon completion of this module, the trainee/student must be able to:

- LO 1. Apply basic language syntax and layout
- LO 2. Apply basic OO principles in the target language
- LO 3. Debug code
- LO 4. Document activities
- LO 5. Test code
LO 1. APPLY BASIC LANGUAGE SYNTAX AND LAYOUT

ASSESSMENT CRITERIA:

1. Observed basic language syntax rules and best practice based on program standard and structure.
2. Used language data types, operators and expressions based on program standard and structure.
3. Used appropriate language syntax for sequence, selection and iteration constructs based on program standard and structure.
4. Used Arrays and array objects based on program standard and structure.

CONTENTS:

- Semantics and Syntax
- Elements of Programming
- Program Control Structure
- Arrays

CONDITIONS:

The students/trainees must be provided with the following:

- PC or workstation
- Programming tools
- Reference Books
- Handouts/Modules/Printed Materials

METHODOLOGIES:

- Lecture / Discussion
- Demonstration
- Hands on exercises

ASSESSMENT METHODS:

- Oral recitation
- Written examinations
- Case Study (Defense)
LO 2. APPLY BASIC OO PRINCIPLES IN THE TARGET LANGUAGE

ASSESSMENT CRITERIA:

1. Implemented a class that contains primitive member / instance variables based on program structure.
2. Implemented a class that contains multiple options for object construction based on program structure.
3. Defined aggregation in a class based on program structure.
4. Implemented inheritance to at least 2 levels of depth based on program structure.
5. Used polymorphism at a simple level through inheritance to enable easy code extension based on program structure.

CONTENTS:

- Principles of Object – oriented programming language
- Encapsulation
- Inheritance
- Polymorphism
- Form, Module, Class, and Objects

CONDITIONS:

The students/trainees must be provided with the following:

- PC with OOPL
- Manual / Printouts
- Programming tools

METHODOLOGIES:

- Hands on exercises
- Lecture / Discussion
- Demonstration

ASSESSMENT METHODS:

- Oral recitation
- Written Examinations
- Case Study (defense)
LO 3. DEBUG CODE

ASSESSMENT CRITERIA:

1. Used particularly an integrated development environment and the language debugging facilities based on program structure.
2. Used program debugging techniques to detect and resolve errors based on program structure.

CONTENTS:

- Errors Handling
- Debugging options
- Procedures in debugging and editing the program
- Compiling the program
- Run the application or program

CONDITIONS:

The students/trainees must be provided with the following:

- PC with OOPL
- Manual / Printouts
- Programming tools

METHODOLOGIES:

- Hands on exercises
- Direct observation
- Group discussion

ASSESSMENT METHODS:

- Direct observation
- Practical demonstration
- Case Study (defense)
LO 4. DOCUMENT ACTIVITIES

ASSESSMENT CRITERIA:

1. Followed the guidelines for developing maintainable code adhering to a set of coding standard.
2. Followed and used internal documentation standards and tools.
3. Designed a built-in application programs in accordance to systems and programming requirements and standards.

CONTENTS:

- Documentation techniques
- Program and documentation standards
- Internal documentation techniques

CONDITIONS:

The students/trainees must be provided with the following:

- PC with OOPL
- Manual / Printouts
- Programming tools

METHODOLOGIES:

- Lecture / Demonstration
- Self paced instruction
- Group discussion
- Hands on exercises

ASSESSMENT METHODS:

- Direct observation
- Practical Demonstration
- Case Study (defense)
LO 5. TEST CODE

ASSESSMENT CRITERIA:

1. Developed and conducted simple test to confirm the coding process to meet design specification
2. Documented the tests performed based on program and documentation standard.
3. Made corrections to the code and documentation as needed.

CONTENTS:

- Testing techniques
- Program and documentation standard
- User Manual
- Printing documents of the programs

CONDITIONS:

The students/trainees must be provided with the following:

- PC
- Programming tools

METHODOLOGIES:

- Lecture / Demonstration
- Self paced instruction
- Group discussion
- Hands on exercises

ASSESSMENT METHODS:

- Direct observation
- Practical Demonstration
- Case Study (defense)
UNIT OF COMPETENCY: APPLY PROGRAMMING SKILLS IN A SECOND LANGUAGE

MODULE TITLE: APPLYING PROGRAMMING SKILLS IN A SECOND LANGUAGE

MODULE DESCRIPTOR: This module defines the competency required to undertake introductory programming tasks using a procedural approach to programming. (An object oriented language may be used in this approach)

NOMINAL DURATION: 42 hours

QUALIFICATION LEVEL: NC IV

SUMMARY OF LEARNING OUTCOMES:

Upon completion of this module, the trainee/student must be able to:

LO 1. Apply basic language syntax and layout

LO 2. Code using standard algorithms

LO 3. Debug code

LO 4. Document Activities

LO 5. Test code
LO 1. SELECT THE PROGRAM LOGIC DESIGN APPROACH

ASSESSMENT CRITERIA:

1. Observed basic language syntax rules and best practice based on the standard of specific programming language.
2. Used language data types, operators and expressions based on the standard of specific programming language.
3. Used appropriate language syntax for sequence, selection and iteration constructs based on the standard of specific programming language.

CONTENTS:

- Semantics and Syntax
- Elements of Programming
- Program Control Structure

CONDITIONS:

The students/trainees must be provided with the following:

- PC Package with OOPL
- Reference Books
- Handouts/Modules/Printed Materials

METHODOLOGIES:

- Lectures
- Discussions
- Demonstrations
- Hands on exercises

ASSESSMENT METHODS:

- Written / Oral Examination
- Case Study (defense)
LO 2. CODE USING STANDARD ALGORITHMS

ASSESSMENT CRITERIA:

1. Used basic programming constructs algorithms based on the standard of specific programming language.
2. Demonstrated ability to create sequential search, insertion and deletion algorithms to operate on one dimensional array based on the specific programming standard.
3. Coded and used standard sequential access algorithms for text and binary files
4. Used of SQL or language facilities to access databases based on the standard of specific programming language.

CONTENTS:

- Algorithm
- Pseudo code
- Array
- Binary files
- SQL

CONDITIONS:

The students/trainees must be provided with the following:

- PC Package with OOPL
- Reference Books
- Handouts/Modules/Printed Materials

METHODOLOGIES:

- Lectures
- Hands on exercises
- Discussions
- Demonstrations

ASSESSMENT METHODS:

- Written / Oral Examination
- Observation
- Practical Demonstration
- Case Study (defense)
LO 3. DEBUG CODE

ASSESSMENT CRITERIA:

1. Reviewed the code visually and / or used of debugging tools provided by the system or the organization
2. Used a debugger to trace code execution and examine variable contents to detect and correct errors based on the program requirements.

CONTENTS:

- Testing techniques
- Errors Handling
- Debugging options
- Procedures in debugging and editing the program
- Compiling the program
- Run the application or program

CONDITIONS:

The students/trainees must be provided with the following:

- PC Package with OOPL
- Reference Books
- Handouts/Modules/Printed Materials

METHODOLOGIES:

- Lectures
- Hands on exercises
- Discussions
- Demonstrations

ASSESSMENT:

- Written / Oral Examination
- Observation
- Practical Demonstration
- Case Study (defense)
LO 4. DOCUMENT ACTIVITIES

ASSESSMENT CRITERIA:

1. Followed guidelines for developing maintainable code adhering to a set of coding standard
2. Followed and used internal documentation standards and tools.

CONTENTS:

- Documentation techniques
- Program and documentation standards
- Internal documentation techniques

CONDITIONS:

The students/trainees must be provided with the following:

- PC Package with OOPL
- Reference Books
- Handouts/Modules/Printed Materials

METHODOLOGIES:

- Lectures
- Hands on exercises
- Discussions
- Demonstrations

ASSESSMENT METHODS:

- Written / Oral Examination
- Observation
- Practical Demonstration
- Case Study (defense)
LO 5. TEST CODE

ASSESSMENT CRITERIA:

1. Developed and conducted simple tests to confirm the coding process to meet design specification
2. Documented the tests performed
3. Made corrections to the code and the documentation as needed.

CONTENTS:

- Testing techniques
- Program and documentation standard
- User Manual
- Printing documents of the programs

CONDITIONS:

The students/trainees must be provided with the following:

- PC Package with OOPL
- Reference Books
- Handouts/Modules/Printed Materials

METHODOLOGIES:

- Lectures
- Hands on exercises
- Discussions
- Demonstrations

ASSESSMENT METHODS:

- Written / Oral Examination
- Observation
- Practical Demonstration
- Case Study (defense)
What is Competency-Based Curriculum (CBC)

- A competency-based curriculum is a framework or guide for the subsequent detailed development of competencies, associated methodologies, training and assessment resources.

- The CBC specifies the outcomes which are consistent with the requirements of the workplace as agreed through the industry or community consultations.

- CBC can be developed immediately when competency standards exist.

- When competency standards do not exist, curriculum developers need to clearly define the learning outcomes to be attained. The standard of performance required must be appropriate to industry and occupational needs through the industry/enterprise or specified client group consultations.

These materials are available in both printed and electronic copies.

For more information please contact:
Technical Education and Skills Development Authority (TESDA)
Telephone Nos.: 893-8281, 817-4076 to 82 loc. 611, 630, 631 and 635 or visit our website: www.tesda.gov.ph or the TESDA Regional or Provincial Office nearest you.